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SUBSURFACE GEOARCHAEOLOGICAL SURVEY OF THE BUILDING 207/231 AREA, PRESIDIO OF SAN FRANCISCO, CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA

Prepared for

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EXECUTIVE SUMMARY

On behalf of the Presidio Trust, the Anthropological Studies Center at Sonoma State University conducted a subsurface geoarchaeological survey in the Building 207/231 area of the Presidio of San Francisco (Presidio). The work was conducted in response to a Corrective Action Plan (CAP) developed by MACTEC (2005), which proposes to remove contaminated materials and soil related to past releases of petroleum (i.e., fuel oil, diesel) in the vicinity of Buildings 207 and 231 during U.S. Army tenure at the Presidio. The geoarchaeological survey was conducted in compliance with Section 106 of the National Historic Preservation Act, as amended, to identify any potential historic properties that might be affected by the soil excavation activities proposed by the CAP. A subsurface geoarchaeological survey was recognized as the most efficient and effective way to identify archaeological deposits in the Building 207/231 area (aka the project area, or the CAP Site), because the present ground surface consists of man-made structures underlain by imported fill soils (fill).

The CAP Site vicinity is an area of prehistoric archaeological sensitivity, as attested by the presence of two nearby archaeological sites, designated CA-SFR-129 and CA-SFR-6. By the 1870s, the Army began filling the marshes and sloughs in the project area and other areas of the Presidio. On the newly filled land, the Quartermaster's complex and other facilities were built, beginning in the 1890s. In 1912 these facilities were demolished to make way for the Panama Pacific International Exposition, whose buildings and structures were themselves demolished in 1916. Beginning in 1917, railroads and associated warehouses were constructed in the area. Crissy Field, the Presidio's airstrip, operated in the vicinity between 1921 and 1936. Intact historic remains from these activities, if identified, might contribute to the Presidio of San Francisco National Historic Landmark District. Between 1933 and 1937, the Golden Gate Bridge and Doyle Drive were constructed, with the drive bisecting the CAP Site. For several decades in the 20th century, the CAP Site and vicinity were used by the Army for various automotive fueling and maintenance facilities, which led to the petroleum contamination of the soil and groundwater that the CAP proposes to remediate.

The geoarchaeological survey was carried out from 23 to 27 January 2006. Nine backhoe trenches ranging from 10 to 20 ft. in length (3.1 to 6.2 m) and 4 to 15 ft. in depth (1.2 to 4.6 m), for a total of 482 cubic meters, were excavated in the Building 207/231 area, directed by an archaeologist and placed in predetermined locations. A crew of four archaeologists recorded the soil profiles and inspected excavated soil for artifacts.

No prehistoric artifacts were identified. Two paleosols (or "old soil" representing stable land surfaces in the past) were revealed: an upper and lower dune, dating to the Holocene/historic era and Holocene, respectively. The soils were poorly formed, suggesting that they were available for human use for only a limited period of time. The historic surface soil was also identified under fill. Several historic-era artifacts were

identified within fill deposits; all were isolated items without research value. Diagnostic artifacts were collected and turned over to the Presidio Trust.

No further archaeological work is recommended at this time. Additional subsurface work may be warranted if new areas are considered for project activities; spot-checking of the ground-disturbing work in the CAP Site is recommended to insure that potentially buried archaeological resources, either historic or prehistoric, are not inadvertently impacted.

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INTRODUCTION

This report documents the results of a subsurface geoarchaeological survey conducted by the Anthropological Studies Center at Sonoma State University (ASC) in response to a Corrective Action Plan (CAP) developed by MACTEC (2005) for the Presidio Trust (Trust). The CAP proposes to remove contaminated soil and materials from the Building 207/231 area located in the Presidio of San Francisco, referred to here as the project area, or the CAP Site (Figures 1 and 2). The geoarchaeological survey was conducted in compliance with Section 106 of the National Historic Preservation Act, as amended, which requires consideration of the effects of an undertaking on properties listed on or eligible for inclusion in the National Register of Historic Places (NRHP). The approach and procedures employed in this study followed those outlined in the geoarchaeological Work Plan prepared by the ASC and MACTEC for the Trust (Dalldorf and Meyer 2005; see Appendix D). Fieldwork was conducted from 23 to 27 January 2006.

ORGANIZATION OF THIS REPORT

This document (1) briefly describes the nature and scope of the project and the project area's natural setting; (2) provides a brief review of previous archaeological studies in and near the Presidio; (3) describes the historic-period land use within and near the CAP Site; (4) details the methods and findings of the geoarchaeological work conducted in the CAP Site by the ASC; and (5) presents conclusions and recommendations.

PROJECT BACKGROUND

Project Area Setting

The project area lies within the northernmost portion of the Presidio of San Francisco, just south of the recently restored segment of Crissy Field Marsh (Figure 2). Prior to the American era, the north shore of the Presidio was an open beach, backed by stable dunes covered by coastal scrub. South of the beach and dunes, a fresh- to salt-water pond marsh/tidal slough system paralleled the shore, draining west to east. The CAP Site area is in an area that was crossed by ever-changing sloughs that were fed by the Presidio's primary watercourse—the spring-fed waters of the Tennessee Hollow watershed—that entered the slough around the location of the project area. The Presidio Mound to the west (CA-SFR-6, see Figure 2) would likely have been served by hillside springs. To the east of the project area's shifting landscape were stable dunes that formed a permanent dry "island" (designated Sand Island, Strawberry Island, or Strawberry Point on early maps), which became the location of the second Presidio Wharf (Jones & Stokes and Albion Environmental 2002:3). This stable dune area and the



Figure 1. Project area location (MACTEC 2005)

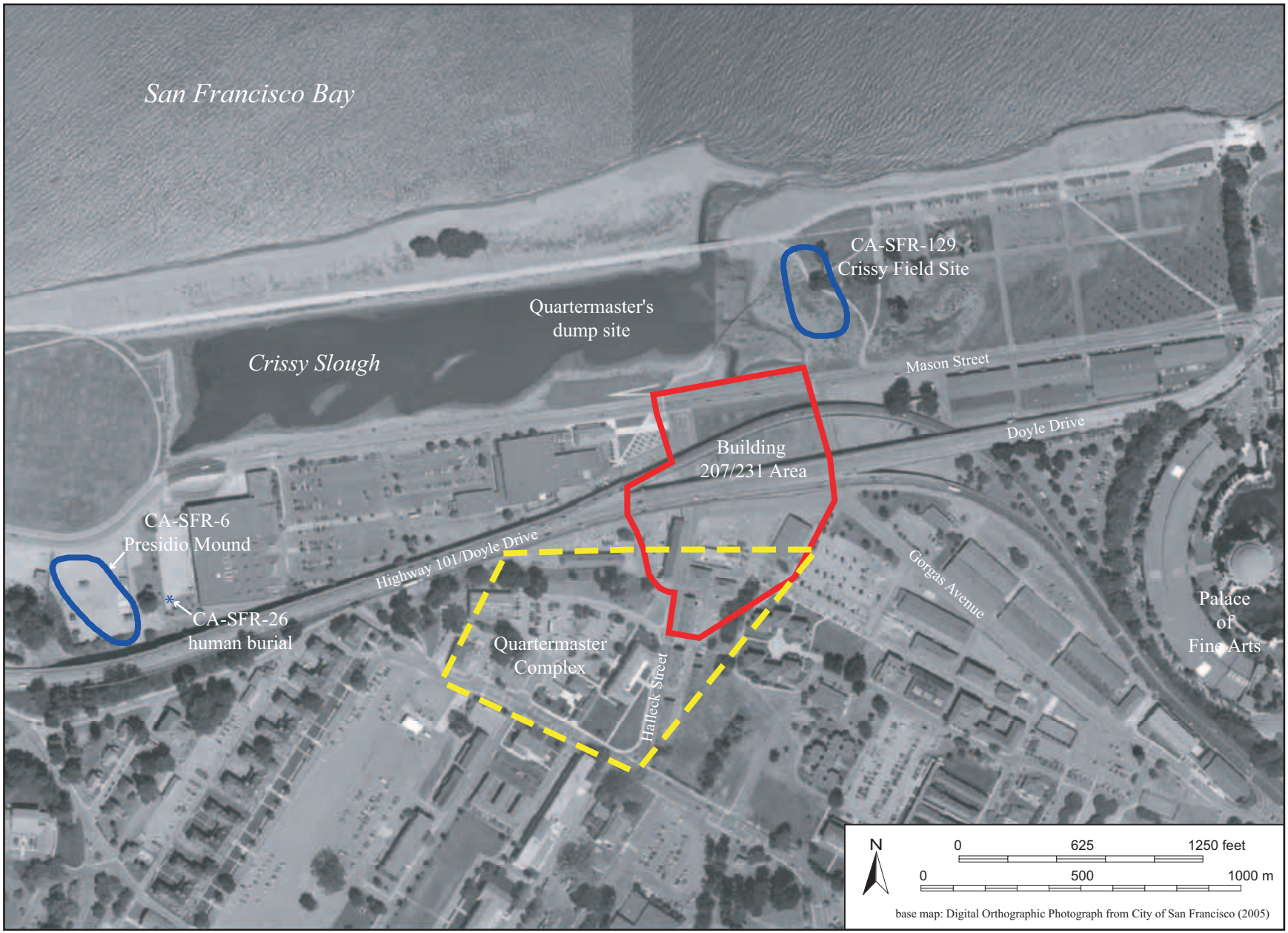


Figure 2. Building 207/231 area (the CAP Site), San Francisco Presidio, and location of nearby archaeological sites. (*Source:* Jones & Stokes 2002; MACTEC 2005)

inland marsh/estuary system behind it provided a diversity of resources for the Native American people who used the archaeological sites of the northern tip of the peninsula at the time of contact and for many centuries previous. (See below for the geoenvironmental setting of the project area.)

Remediation Project Description

The Building 207/231 Area is an approximately 8-acre site that was primarily used by the Army for servicing and fueling vehicles, and contained two service/gas stations, underground storage tanks (USTs), garages, a dry cleaning facility that used Stoddard solvent, and a fuel oil distribution system (FDS). Previous corrective actions at the Site included removal of the gas station, the removal of all known USTs, and the removal of FDS pipelines. Petroleum-contaminated soil associated with each of these removal actions was excavated and disposed of off-site.

A Data Gaps Investigation was conducted at the Building 207/231 Area in 2004 to address data gaps identified from review of chemical, hydrogeologic, and historical data collected during previous investigations at the Site (MACTEC, 2004). The investigation was conducted to further characterize the nature and extent of chemicals in soil and groundwater at the Site and provide additional data needed to support the preparation of the CAP. Field work consisted of a geophysical investigation to investigate potential UST locations, drilling 34 soil borings, collecting soil and groundwater samples from the borings, and analyzing the samples for various chemicals compounds. The results of the investigation were incorporated into the CAP and included in the evaluation and identification of areas requiring remedial action (MACTEC, 2004 a,b).

The CAP Site currently consists of several buildings, paved parking areas, roadways, and some open areas and landscaping. Two of the buildings (Buildings 228 and 229) and a historic wall are designated for preservation as historic resources. Potential future uses of the Building 207/231 Area may include extension of Crissy Marsh adjacent to the historic wall; restoration of the freshwater Tennessee Hollow Riparian Corridor; and replacement of the Doyle Drive/Highway 101 overpasses.

In 2005, removal action and site investigation data were evaluated in the Corrective Action Plan (CAP) with respect to applicable cleanup levels to identify areas where residual contamination may be present at concentrations that could potentially pose a risk to human health, the environment, or drinking water quality (MACTEC 2005). Based on this review, the CAP identified five general areas (Remedial Units or RUs) where chemicals of concern (COCs) are present above cleanup levels—the primary COCs are petroleum hydrocarbons as gasoline, diesel, or fuel oil. The CAP proposes to remediate these areas by excavating petroleum-contaminated soils from four of the RUs and disposing the soils offsite at a permitted landfill facility. The fifth RU that is inaccessible due to the presence of historic structures will be left in place and surface cover (i.e., building foundations) will be maintained with a land use control.

Goals of the Subsurface Archaeological Survey

The CAP proposed that a pre-remediation archaeological investigation be conducted to avoid or minimize potential adverse impacts to unidentified, NRHP-eligible archaeological resources during the course of the remediation excavations. The need for a subsurface survey was prompted in part by the fact that the present ground surface in the project area contains fill and man-made structures that have effectively buried former natural and man-made ground surfaces. Thus any intact archaeological deposits in the project area are buried. A subsurface geoarchaeological survey was recognized as the most efficient and effective way to identify buried archaeological deposits. At the same time, the survey could assess the general structure, composition, integrity, and stratigraphic sequence of the natural and/or cultural subsurface deposits. The general goal of the subsurface survey was to characterize past human use of the project area in relation to the events and/or conditions that led to the formation of the present landscape by revealing former landscapes and identifying prehistoric or historic-era archaeological remains that might be present. Because human occupation in the region is generally accepted to span the last 13,000 years, this geoarchaeological survey focused on Holocene and late Pleistocene deposits.

GEOENVIRONMENTAL SETTING

GEOENVIRONMENTAL HISTORY

The San Francisco Bay Area has undergone a series of significant environmental changes since people first entered and inhabited the region. Studies suggest that climatically induced environmental fluctuations, most notably Holocene sea-level rise, were responsible for large-scale landscape changes in the Bay Area (Atwater 1979; Atwater et al. 1979; Atwater, Hedel, and Helley 1977; Bickel 1978a, 1978b; Borchardt 1992; Koltermann and Gorelick 1992; Rogers 1988). These changes included repeated episodes of widespread sediment deposition that buried large portions of the landscape once available for human use and occupation. As a result, the region's archaeological record does not accurately reflect the timing or extent of human use, because older sites tend to have been destroyed, buried, or obscured by Holocene landscape evolution (Meyer 1996, 2000; Meyer and Rosenthal 1997).

Throughout the Pleistocene, sea levels have cyclically risen or fallen in step with global climatic conditions and the presence or absence of large continental ice sheets. Near the end of the latest glacial cycle, more than 12,000 years ago, the ocean had not yet entered San Francisco Bay because worldwide sea levels were at least 100 meters (m), approximately 330 feet (ft.), lower than today. At that time, much of the bay was a broad inland valley, crossed by several stream or river channels that supported grassland and riparian plant and animal communities. The runoff carried by these streams and rivers eventually combined with the ancestral Sacramento River; the river flowed westward just north of Angel Island, through the Golden Gate Straights (located about 1.3 miles, or 2.1 km, northwest of the project area), to near the Farallon Islands, where it emptied into the Pacific Ocean (Atwater, Hedel, and Helley 1977). If prehistoric people inhabited the Bay Area at this time, it seems likely that the riparian corridors and perennial water sources would have been targeted for human settlement and subsistence activities. The watercourse that flows through Tennessee Hollow and bisects the CAP Site may have been such a location. Before it was submerged by rising sea levels, the drainage flowed through Tennessee Hollow, turning to the northwest and eventually reaching a confluence with the ancestral Sacramento River. A submarine canyon that drains from a point northwest of the project area to a confluence with the ancestral Sacramento River near the Golden Gate indicates the likely course of the ancient Tennessee Hollow drainage (California Department of Fish and Game 2003).

As the continental ice sheets began to melt toward the end of the Pleistocene, the oceans of the world experienced a rapid rise in sea level, causing the Pacific to migrate eastward and enter San Francisco Bay near the Golden Gate by about 10,000 years ago (Atwater, Hedel, and Helley 1977). Current radiocarbon estimates indicate that the sea levels subsequently rose an additional 25 to 30 m, or about 82 to 100 ft., between about 10,000 and 8,000 years ago, covering most of the present San Francisco Bay Estuary. The rate of sea-level rise in San Francisco Bay decelerated dramatically between about 8,000

and 6,000 years ago (Atwater 1979; Atwater, Hedel, and Helley 1977; Stanley and Warne 1994; Wells 1995; Wells and Goman 1994).

As the rate of sedimentation began to outpace the rate of submergence, extensive tidal flats and marshes were formed around the margins of the bay (Atwater et al. 1979) and covered the lower floodplains of the inland valleys. Evidence of these buried floodplains has been identified at depths ranging from 9 to 40 m (29.5 to 131 ft.) below mean sea level (BMSL), and radiocarbon-dated from 10,920 to 9,760 calibrated radiocarbon years before present, or cal B.P. (Atwater, Hedel, and Helley 1977; Story, Wessels, and Wolfe 1966). It is likely that many archaeological sites associated with these former floodplain surfaces were destroyed and/or submerged by the advancing sea (Atwater 1979; Bickel 1978a; Louderback 1951). Streams and rivers entering the bay were forced to adjust to a progressively higher baseline (lower hydrologic gradient) caused by the rising sea, emerging wetlands, and increasing sedimentation rates. In response, the lower reaches of many channels were overwhelmed with sediments that were spread onto the surface of surrounding floodplains (Helley et al. 1979). During this time, as the upper reaches of many streams and rivers adjusted to the rising baseline, existing floodplains were subject to intensive erosion and lateral channel migration. These changes led to the formation of an "alluvial apron around the bay plain and the extensive valleys of the region" that is graded to the present sea level (Helley et al. 1979:18).

During the Middle and Late Holocene, the San Francisco Bay–Estuary continued to expand due to the decomposition, compaction, and subsidence of the intertidal deposits around the margins (Atwater 1979; Atwater et al. 1979; Atwater, Hedel, and Helley 1977). By the 1850s, tidal marshes covered twice as much surface area as all the inland water of the bay and delta combined (Atwater et al. 1979). It is possible that Middle and Late Holocene human populations relocated settlements progressively farther inland due to continued estuary expansion, a pattern that might be detected in and around the CAP Site.

Both geological and geoarchaeological studies confirm that many Late Pleistocene and Early Holocene land surfaces in the San Francisco Bay region are overlain by alluvium that is generally less than 6,000 years old (Borchardt 1992; Helley et al. 1979; Meyer 1996; Meyer and Rosenthal 1997; Pape 1978; Rogers 1988). The older land surfaces often exhibit well-developed buried soil profiles (paleosols), which indicates that they were relatively stable. A *paleosol* is an "old soil" that formed during a prolonged period of near-surface weathering on a relatively stable land surface in the past, but is not actively forming at the present (Retallack 1988; Waters 1992; Yaalon 1971). The recognition of paleosols is crucial for geoarchaeological studies because they represent relatively stable land surfaces that were potentially available for human occupation. A paleosol may represent hundreds or thousands of years of non-deposition and soil development, depending on the duration of relative landform stability. If a stable landform is buried by sediment, the process of soil formation must start again at the surface of the new deposit. Once buried, these surfaces reflect certain environmental

conditions that had been present during a period of landform stability at or near the ground surface (Birkeland, Machette, and Haller 1991). As such, paleosols are useful stratigraphic markers for locating buried archaeological deposits and correlating depositional sequences in different parts of the Bay Area (Meyer 2000).

In addition to widespread alluvial deposition, wind-blown (aeolian) sand dunes cover a large portion of the northern San Francisco peninsula (Knudsen et al. 2000; Meyer 2004; Schlocker 1974). While the age and evolution of these dunes are only partly understood, the available stratigraphic and radiocarbon evidence indicates the San Francisco dune field was formed by at least two or three episodes of dune migration, with much longer intervening periods of relative dune/landform stability. For example, recent geoarchaeological studies have found laterally extensive Middle Holocene-age sand dunes with well-developed buried soils in the eastern part of the dune field (Mc Ilroy, Meyer, and Praetzellis 2001; Praetzellis et al. 2004). These formerly stable land surfaces were available for human use and occupation from at least 6800 to 3600 cal B.P.—a period that spans the age from the deeply buried Bay Area Rapid Transit System (BART) skeleton (5640 cal B.P) from site CA-SFR-28 along Market Street.

It appears that this stable period was interrupted by active dune migration around 2,000 years ago, based on a date from marsh deposits that underlie dune sand at Market and Fulton streets (Kelly, Spiker, and Meyer 1978). Dates from buried dune soils and archaeological deposits (CA-SFR-112, -113) point to another period of dune stability between about 2000 and 1000 cal B.P. (Pastron and Walsh 1988a, 1988b), or after the time that prehistoric people had already occupied the area. As such, the buried soils that mark the former ground surfaces of the Middle- and Late Holocene-age dunes are generally estimated to have the potential to contain buried archaeological deposits, while the thin and weakly developed buried soils within the latest Holocene-age dunes are estimated to have a low potential to contain buried prehistoric archaeological remains.

This brief outline demonstrates that large-scale environmental changes have played a pivotal role in the evolution of the Bay Area landscape and undoubtedly influenced the distribution of plant, animal, and human communities in and around the bay. Geoarchaeological studies indicate that changes of such magnitude were accompanied by repeated episodes of widespread sediment deposition that buried many older prehistoric sites, creating a biased and incomplete picture of the region's archaeological record (Meyer 1996, 2000; Meyer and Rosenthal 1997). For a more in-depth treatment of pertinent regional geoarchaeological research issues, see Meyer (2003 and 2004b).

SURFACE AND SUBSURFACE DEPOSITS

The existing information about landscape history, soils, and geology in the project area is discussed in this section, as are the previous studies that are relevant for understanding the surface and subsurface deposits in the CAP Site.

Surface Deposits

Existing soil and geologic maps provide general information about the nature and extent of project area surface deposits. Surface soils are classified as urban land in the northern two-thirds of the project area and as orthents of the cut-and-fill urban land complex in the southern one-third (USDA 2004). Knudsen et al. (2000) have mapped the quaternary geologic units at the surface of the project area, which mainly consist of fill over bay mud, with a very small area of Quaternary alluvium in the extreme southwest corner. Together, these studies indicate a substantial amount of fill has been deposited in the project area. This fill may cover prehistoric remains and may contain redeposited archaeological materials.

Subsurface Deposits

At least two studies have examined the subsurface stratigraphy of the project area. Basin Research Associates, Inc. (2001) produced a coring program report based on the results of 88 cores in and around the Building 207/231 Area. The report found no evidence of prehistoric sites or cultural materials. Four of the 9 cores in the CAP Site area were concentrated around Building 230 and returned positive results for historic-era cultural material. There are significant limitations, however, to the site-identification potential possessed by this "soda-straw" method of subsurface investigation, especially for prehistoric sites. Jones & Stokes (2002) mechanically excavated five trenches in the project area, four located north of Gorgas Avenue. None revealed any prehistoric archaeological material; one contained historic-era artifacts.

The subsurface stratigraphy documented in these reports was examined for the present field investigations. Unfortunately, the reports contain very little pedogenic analysis of subsurface sediments, critical for a geoarchaeological understanding of the project area. Moreover, the Jones & Stokes report found that "a more extensive trenching program would be needed to document the many land-filling events on the lower post" (2002:95).

ASC staff geoarchaeologist Graham Dalldorf preliminarily examined selected cores generated by the aforementioned coring program (Basin Research Associates, Inc. 2001). The assessment confirmed the presence of fill and weakly developed buried soils. The fill is widespread, but highly variable in thickness—likely a reflection of the varied topography of the prehistoric dune and marsh landscape. The weakly developed soils appear to be located on former dune surfaces that are cited by Meyer (2002) as archaeologically sensitive.

Based on this review of existing data, the project area is considered sensitive for both prehistoric and historic-era archaeological deposits and materials.

CULTURAL SETTING

PREHISTORIC AND ETHNOGRAPHIC OVERVIEW

Prehistoric and ethnographic overviews for the northern San Francisco peninsula are presented in Jones & Stokes's (2002) survey and evaluation report for the Doyle Drive Corridor Project. See that volume for details on the chronological framework for the San Francisco Bay Area and on the history of archaeological investigations in the area. A brief summary of the work conducted in the Presidio area and environs is given below, based on that report and on the prehistoric research issues section of the Golden Gate National Recreation Area (GGNRA)/Point Reyes National Seashore overview of research issues (Stewart 2003).

Development of the Presidio (founded in 1776), and later of the city of San Francisco, has destroyed or buried all but a handful of archaeological sites on the northern San Francisco peninsula. In the early 1900s, excavations were conducted by U.C. Berkeley archaeologists at two San Francisco archaeological sites: Nels Nelson in 1910 at Hunter's Point (CA-SFR-7, the Bayshore Mound) and L.L. Loud in 1912 at the Presidio Mound (CA-SFR-6). The investigations were large scale but never fully analyzed or reported (Moratto 1984:267). The findings from these two mounds, both apparent long-term occupation sites, were used in Beardsley's (1954) regional chronology. (The former site, CA-SFR-6, was recently identified within the Doyle Drive Area of Potential Effects (APE), see Review of Previous Studies below.) An archaeological find that documented the great time depth in the area was made in 1969, when deeply buried human bones were discovered during the construction of the Civic Center station on the BART, well outside the parklands; radiocarbon dates are the oldest for San Francisco, at 5640 cal B.P. (calibrated years before present). Later, also outside the Presidio area, other deeply buried sites have been identified during urban development, most of them dating to the Middle period, ca. 500 B.C. to A.D. 1000 (Pastron and Walsh 1988a, 1988b).

Of the 23 sites that had been recorded in San Francisco by the mid-1970s, only 2 were known to be extant at that time: CA-SFR-5 and CA-SFR-21, listed (in 1976) as the Point Lobos Archaeological Sites on the NRHP. In the first excavations to occur in San Francisco since L.L. Loud's work in 1912, the Point Lobos sites (within the Sutro Baths area of the GGNRA) were investigated by Holman et al. (1977).

Several sites have been identified in San Francisco since the mid-1970s, some encountered accidentally and others found in connection with planned construction and development projects. The first and most extensive investigations were conducted by Suzanne Baker in 1978 at three previously unknown shell middens within the boundaries of the Park's Fort Mason, CA-SFR-29, -30, and –31. The sites contain artifacts and features indicating they were permanent or semi-permanent habitations, rather than seasonal collecting stations; two radiocarbon dates (from CA-SFR-29 and 30) indicate use during the Middle-Late period transition and Late period (Moratto 1984:267; Rudo

1982:29–30). Other prehistoric finds located to date within the Presidio and other San Francisco GGNRA land include recently identified CA-SFR-129 (the Crissy Field site) and the recently relocated CA-SFR-6, both of which are discussed below.

Several large occupation sites were present on the northern tip of the San Francisco peninsula, dating from the Middle period or earlier and continuing into the Late period. The *Yelamu* tribelet, consisting of Costanoan-speaking people living in small family bands, are known to have occupied the northern San Francisco peninsula at the time of historic contact, based on mission-record data. Two groups of Yelamu lived in the Mission Creek and Visitation Valley areas, while a third group occupied the village of *Petlenuc,* which may have been located near the site of the Spanish presidio. The groups joined the mission beginning in 1777 (Milliken 1995:260), and no historic accounts of these villages are known.

REVIEW OF PREVIOUS STUDIES IN THE DOYLE DRIVE CORRIDOR

An Archaeological Survey/Historic Study Report was prepared for the Focused Archaeological Area of Potential Effects (APE) of the Doyle Drive Corridor Project by Jones & Stokes (2001), followed by an archaeological testing program through the APE in November and December 2001. The objectives of the testing program were to identify archaeological resources in the APE, delineate their boundaries, and assess their eligibility for inclusion in the NRHP and the California Register of Historical Resources. The Phase I Extended Survey/Phase II Evaluation Report (Jones & Stokes 2002) documents the findings and results of the program. The report provides a comprehensive research design for historic and prehistoric sites, which serves the same purposes for the present study.

Prehistoric sites in or adjacent to the Doyle Drive Project APE include the remains of prehistoric shellmound CA-SFR-6, the Presidio Mound, first identified and recorded in 1912 by L.L. Loud, when it was unearthed during marshland reclamation for the Panama Pacific International Exposition (PPIE). It was covered over shortly thereafter and was not relocated until archaeological testing of the Doyle Drive APE. The site is less than 500 m (approx. 1,645 ft.) west of the CAP Site, set near the base of steep cliffs (Figure 2). A human burial, designated CA-SFR-26, had been recovered in the 1970s from the same location (Moratto and Heglar 1972); at that time the midden site was not encountered, and the burial, including a cut-and-polished bird-bone fragment, was considered an isolated find (Moratto 1984:267). Trenching was conducted at CA-SFR-6 as a part of the Doyle Drive Project (Giambastiani and Fitzgerald 2001). A radiocarbon sample from the midden of CA-SFR-6 and a sample from the human remains (CA-SFR-26) yielded similar radiocarbon dates in the Late prehistoric period. No other evidence of archaeological deposits was identified during the testing program. CA-SFR-6 was evaluated as eligible for the NRHP under Criterion D, for its potential to make important contributions to various research issues identified in the research design; it may also be eligible under Criterion A, for traditional or other values attributed to

ancestral sites by the modern Ohlone community. According to the authors, CA-SFR-6 also appears to constitute a historical resource for purposes of the California Environmental Quality Act (Jones & Stokes 2002).

In the immediate vicinity of the CAP Site is CA-SFR-129, the Crissy Field site, which is located about 50 m (less than 200 ft.) from the northeast corner of the project area. The site was investigated by Holman & Associates for NPS's Crissy Field marshland restoration project (Clark 2001) but is outside the APE for the Doyle Drive Project. CA-SFR-129 is an intensively used site that dates to Phase 2 of the Late period (ca. A.D. 1500); it yielded a large faunal assemblage of shellfish, marine mammals, marine and migratory birds, terrestrial mammals, and fish. The site was determined to be eligible to the NRHP and was avoided for marshland restoration (Jones & Stokes 2002).

Also investigated for the Crissy Field Restoration Project was the Presidio's historic-era Quartermaster's Dump (Figure 2), which had been anticipated within the restoration area (Holman & Associates 1999). Test-phase investigations revealed the presence of a large deposit of material relating to the Presidio's organized system of dumping from the 1880s to 1912. In 1912, the area was covered with dredged bay sands in preparation for construction of buildings for the PPIE. Based on the findings of the test excavations, several areas within Crissy Field were evaluated as potentially contributing to the Presidio's National Historic Landmark District (see below), and data-recovery excavations were undertaken (Ambro and Clark 2003). Over 500,000 artifacts were recovered; the artifacts represent a variety of military and domestic activities, as well as those associated with a port city on the Pacific.

The Presidio of San Francisco was designated a National Historic Landmark District (NHLD) in 1993 (Alley et al. 1993): several historic sites and features that potentially intercept the Doyle Drive APE were found to be contributing elements to the district (see Table 2 in Jones & Stokes 2002). None of these were identified by the 2001 testing program by Jones & Stokes, probably due to the extensive grading and fill removal that have occurred in this area. Jones & Stokes's archaeologists concluded that the few historic-period features and objects identified during the testing program do not contribute to the NHL district.

HISTORICAL USES OF THE BUILDING 207/231 PROJECT AREA

A full historical context for the Presidio was presented in the nomination for the NHLD designation (Alley et al. 1993). In the ASR/HSR, Jones & Stokes (2001) focused the context on the Doyle Drive project area, and listed anticipated property types in the APE. A brief look at the historic-period uses of this area and its immediate surroundings is given below; much of this information has been extracted from the CAP's (MACTEC 2005) summary of the information presented in the ASR/HSR (Jones & Stokes 2001). This discussion focuses on that area to be affected by proposed remedial action in the CAP Site.

The historic period began in the late 1760s to early 1770s, when Spanish explorers made initial contacts with the local Native Americans. Between 1776 and 1846, the Presidio was an outpost occupied by the Spanish, followed by the Mexicans, with minimal activity and no known structures within the area of the Doyle Drive APE. The beach and sand dune areas, described as Strawberry Island, were reportedly used for offshore anchorage. Access to the anchorage would have been along higher ground around the APE, rather than through the marsh that occupied the location at that time.

In 1850 after four years of American occupation, the Presidio was designated a U.S. military reservation; the NHLD period of significance for the Army occupation is from 1850 until the end of World War II in 1945. During the 1850s the Army focused improvements on new wooden barracks, a hospital, a guardhouse, a supply storehouse, and new stables—all south of the CAP Site in the main post area. By the 1870s, the Army was filling in portions of the marsh and slough, with the greatest landfilling occurring between about 1895 and 1912.

Constructed between 1896 and 1903, Quartermaster's facilities were built in the lower post area, adjacent to the marsh; buildings and structures included several large Cavalry and Quartermaster's stables, a guardhouse, and the Quartermaster storehouse. The complex was to the southwest of and extended into the CAP Site in the location of Building 231 (Figure 2). The Quartermaster complex ultimately consisted of numerous buildings, including stables, storehouses, gun and wagon sheds, shops, blacksmith shops, and granaries. The need to expand these facilities initiated the partial filling in of the marsh and slough, first to construct road access to wharves along the bayshore, then to construct additional stable and other facilities. The materials used to fill in the marsh and slough included both reworked beach sand and refuse from the Presidio. The archaeological investigation of the Quartermaster's Dump site (no trinomial) for the Crissy Marsh restoration is mentioned above.

Construction of the PPIE occasioned some of the most significant land altering in the Presidio in the 20th century. Preparation for the PPIE began in 1911 and continued until opening in February 1915. The Cavalry stables west of Building 231 were removed in 1912 and 1913; by 1915, the remaining marshes and sloughs had been completely filled in, and the buildings, utilities, and roadways associated with the exposition had been constructed. The exposition encompassed 625 acres in a band of filled land bordering the bayshore north and east of the Presidio, with the largest and most elaborate pavilions housing international exhibits located to the east, between the Fort Mason area and the extant Palace of Fine Arts. In the approximate area of the CAP Site, exhibits included those for various countries (the Philippines, Canada, and Sweden) and possibly the northeastern area of the horticultural gardens (City of San Francisco 2006). Most of the PPIE facilities were dismantled after the exposition's closing on 4 December 1915—after less than one year of operation, instead of the planned five, because of impending World War I. The remaining buildings were converted to military use in preparation for the war. Although these operations might have created deposits that would have been viewed as historically significant decades later, a scrupulously

thorough clean-up followed dismantling, leaving virtually no remains of the exposition, and probably removing much earlier historic debris in some locations as well. Features associated with the PPIE are listed as predicted archaeological finds at the Presidio (Jones & Stokes 2002: Table 2); no PPIE features have been evaluated for their contribution to the NHLD.

In 1917, railroad lines were constructed from Fort Mason to the northeastern corner of the Presidio along Mason Street. The Building 38 complex (including Bldg. 38, 38A, and a garage) was located east of the Building 207 Exchange Service Station. An oil station was present adjacent to the rail line as early as 1921 and was designated as a gasoline station 13 years later (NPSA Maps 1921, 1928, 1934, cited in MACTEC 2005). These rail lines are no longer visible on the ground surface within the APE, and the buildings have been removed.

The large flat left behind after the exposition buildings had been cleared away attracted the attention of early Army aviators. By July 1920, the Presidio's airstrip—named Crissy Field—was constructed; it became a permanent post beginning in 1921. The dangerous conditions along the coast closed the field as a first-line air base in 1936 (Thompson 1997, cited in Jones & Stokes 2002:7).

Between 1933 and 1937, the Golden Gate Bridge and the elevated highway that forms the southern Doyle Drive approach were constructed, with the elevated portions passing east to west through the CAP Site. Among the facilities removed for the construction of viaducts to the Golden Gate Bridge in 1933-34 were the Quartermaster Stables (Building 204), Corral, and Forage Storehouse (Building 201), which had remained a functional part of the Presidio until that time. During World War II, the level of military activities reached their peak as the Presidio became the center for Army operations in defense of the western United States. Although the Presidio continued to serve as a military installation from the close of World War II to the 1990s, the period of historical significance for military operations at the Presidio is considered to have ended in 1945. Between 1945 and 1994, the Army primarily used the Building 207/231 area for servicing and fueling vehicles. (The resulting soil contamination from these practices is the primary focus of MACTEC's CAP; see above.)

DESCRIPTION OF FIELDWORK

EXPLORATION TRENCH STRATEGY

A series of exploration trenches were excavated using a tractor-mounted backhoe with a standard 36-inch wide bucket. The backhoe was provided and operated by Environmental Remediation/Resources Group, Inc. (ERRG), under the direction of ASC personnel. Trenches were placed to maximize the artifact discovery potential while staying within the general bounds of the remedial units identified in the CAP (MACTEC 2005). The general location and overall size of the proposed trenches were governed by the following principles stated in the Work Plan:

1. Trenching is to be generally restricted to the locations where earth-disturbing activities are most likely to occur during implementation of the CAP.
2. Within the CAP excavation areas, trenches will be placed at locations considered to have the greatest potential to contain buried prehistoric archaeological deposits (i.e., stream banks, edges of marsh or slough) and/or at locations where the subsurface landform stratigraphy is expected to be most informative (i.e., contact between two or more deposits or landforms) [Dalldorf and Meyer 2005:6].

Given these considerations, trenching was focused within the now buried, former floodplain of an unnamed creek that drains Tennessee Hollow and the sand dunes located along the north and south margins of the marsh/slough, as indicated by historic maps. The trenches were oriented to avoid existing structures and known underground utilities, while maximizing the opportunity for archaeological discovery; this limited the amount of material that could be generated from the excavations.

The locations of the exploration trenches are shown in Figure 3. Table 1 summarizes the CAP remedial unit characteristics, including depths verified in the field, and the number of trenches in each. The precise location, size, and orientation of each trench was determined in the field based on existing conditions and constraints, such as the most current information regarding the location of previously unknown underground utilities, as well as the results of active or previous trenching. All exploration trenches were about 1.0 m (3.3 ft.) wide; they ranged in depth from 2.7 to 4.6 m (8.9 to 15.1 ft.), and were from 10.0 m (32.8 ft.) to about 19.5 m (64.0 ft.) long. The greater depths of 15 ft. (the maximum reach of the backhoe) were achieved only in a few trenches for short segments in an attempt to reach Pleistocene deposits. Excavating deeper only in short segments of each trench allowed the explorations to respond to differences in the contours of the subsurface deposits while still facilitating safe access and egress from the trenches (see Trench Safety and shoring issues in the Work Plan). The Work Plan lists conditions under which excavation of a trench could be halted (Dalldorf and Meyer 2005:7–8). ASC personnel recorded the location of each trench using global positioning system technology.



Figure 3. Location of geoarchaeological trenches for the Building 207/231 Area, the CAP Site

Table 1. Remedial Unit Stratigraphic Characteristics

Remedial Unit Name	Surface Deposits	Subsurface Deposits*	Depth of Fill* bgs (ft./m)	Depth of Proposed Impact** bgs (ft./m)	Number of Trenches
Former Bldg. 207 Area	Fill	Alluvium	9.5/2.9	7.5/2.3	2
Former Bldgs. 38, 38-A Area	Fill	Mixed alluvium and aeolian	≥7.5/2.3	10.0/3.0	2
Existing Bldg. 231 Area	Fill	Mixed alluvium and aeolian	≥5.9/1.8	10.0/3.0	4
Existing Bldg. 230 Area	Fill	Alluvium	6.6/2.0	5.5/1.7	1

All depth measurements are approximate. *Based on results from the present study. **According to CAP.

Due to the potential for hazardous soils, the field methods complied with both the Work Plan prepared by the ASC (Dalldorf and Meyer 2005) and the site safety plan prepared by MACTEC (MACTEC 2005). MACTEC personnel were on site and responsible for health and safety monitoring and environmental sampling. A copy of MACTEC's report is included as Appendix A. All crew members in contact with excavated soils wore Tyvek suits and gloves in addition to standard work clothing, including boots, hard hats, and safety vests. Prior to excavation, an exclusion zone was set around the work area. Typically the area was defined with barricades, safety cones, and caution tape. Efforts were made to avoid contact between excavated soils and the current ground surface. In the case of trenches 207TP100 and 38TP100 north of Doyle Drive, plastic sheeting was placed on the adjacent grass surface to segregate excavated soils from the grass for backfilling the trenches. Soils from other trenches were stockpiled atop asphalt paving.

FIELD METHODS

Subsurface survey excavations were conducted from 23 to 27 January 2006. Investigation of the nine subsurface survey trenches resulted in the excavation and inspection of approximately 482 cubic meters (m^3) of material, for an average of about 53.6 m^3 per trench. The subsurface deposits exposed in these trenches were examined, described, and photographed in the field (see below).

Typically, trenches were initially excavated to a depth of 1.2 m (4 ft.) to allow safe entry into the trench for inspection of soil profiles. After inspection, the trench was excavated to full depth either across the entire trench or in selected locations. All of the excavated soils were inspected, and selected soils were screened. Tasks were usually divided, with one crew member recording soil profiles and taking photographs; two crew members inspecting excavated soils for artifacts using rakes, hoes, or shovels to

break apart the soil; and one person identifying soils, alternating between the trench and excavated piles. Due to saturated soils, from groundwater and from water in abandoned utility lines, the sides of the trenches were unstable and frequently slumped. This condition did not always allow photography of profiles, and at times soil depths had to be estimated based on the length of the backhoe bucket relative to a measured layer above.

Artifacts were collected and set aside, along with information on their stratigraphic location, until excavation of each trench was completed. Artifacts of special interest, including a diagnostic local bottle base, a historic bone item, and a sample of shell, were washed in the field, bagged according to the Protocols for Contaminated Archeological Artifacts on Presidio Park Lands (Praetzellis 2005), and delivered to the Trust archaeologists at the Presidio. Most artifacts were photographed in the field prior to backfilling trenches. With the exception of the bottle base, bone item, and shell sample previously mentioned, all artifacts were of limited interpretive or research value and were returned to the trenches during backfilling.

STRATIGRAPHIC IDENTIFICATION AND DESCRIPTION

The natural and cultural stratigraphy were identified by carefully examining the deposits exposed in the sidewalls of the subsurface survey trenches. Stratigraphic units (strata) were identified on the basis of physical composition, superposition, relative soil development, and/or textural transitions. In the field, each stratum was assigned a Roman numeral (I, II, III, etc.), beginning with the oldest or lowermost stratum identified in each trench. Paleosols, representing formerly stable ground surfaces, were identified in the field on the basis of color, structure, horizon development, bioturbation, lateral continuity, and the nature of the upper boundary (contact) with the overlying deposit (Birkeland et al. 1991; Retallack 1988). The master soil horizons were designated by upper-case letters (O, A, B, C, or R), preceded by Arabic numerals (2, 3, etc.) when the horizon is associated with a different stratum (i.e., 2Cu); number 1 is understood but not shown. Lower-case letters were used to characterize subordinate soil horizons as follows: "i" for slightly decomposed organic matter; "b" for a buried genetic horizon (not used with C horizons); "o" for residual pedogenic sesquioxide accumulation; and "p" for a plow layer or other artificial disturbance. Deposit(s) of fill (Ap horizon[s]) characterize the upper portion of trench sidewalls. Combinations of these numbers and letters indicate the important characteristics of each major stratum and soil horizon; they are consistent with those outlined by Birkeland et al. (1991), Schoeneberger et al. (1998), and the Soil Survey Staff (1998).

Trenches excavated into different landforms usually exhibit dissimilar stratigraphy, due to the diverse processes involved in each landform's formation. As a single trench may contain only a portion of the stratigraphy for the area, the results from the excavations had to be compared and correlated to construct the project area's stratigraphic sequence.

FIELDWORK RESULTS

No prehistoric cultural materials were discovered as a result of the field investigations. Stratigraphy exposed in the trenches, however, revealed the presence of two paleosols formed in aeolian deposits: an upper and lower dune. Because the upper paleosol appears to be latest Holocene/historic in age and would have been available for human occupation, a moderate degree of archaeological sensitivity is associated with it. The lower paleosol is probably Holocene in age, and thus also has a moderate degree of archaeological sensitivity associated with it. Numerous isolated historic artifacts were observed. Diagnostic historic artifacts were recovered, treated in accordance with previously agreed-upon procedures in the workplan, and given to Trust archaeologists upon conclusion of subsurface excavations (Dalldorf and Meyer 2005). MACTEC personnel were on site and responsible for health and safety monitoring and environmental sampling (Appendix A).

The sections below describe the major stratigraphic units of the trenches and the landscape history inferred from them. The cultural materials identified at the location are then described by trench.

SUBSURFACE STRATIGRAPHY

Introduction

In accordance with the Work Plan (Dalldorf and Meyer 2005), trenches were not entered after they had been excavated to depths in excess of 1.2 m (4.0 ft.). Careful examination of trench sidewalls was thus restricted to the upper deposits, from the surface to depths of 1.2 m (4.0 ft.). Examination of deposits excavated from greater depths was limited to the trench spoils, resulting in incomplete stratigraphic and pedogenic descriptions (see Appendix B - Trench Soil Descriptions).

A number of different stratigraphic units were identified during the trenching. As was expected given the geomorphic setting of the CAP Site depicted on historic maps (Figure 4), the subsurface stratigraphic units can be roughly grouped into three categories (generally from oldest to youngest): dune deposits, beach/slough interface deposits, and slough deposits. A fourth category, fill deposits, comprised the surface throughout the entire CAP Site. Because the timing of the depositional events that created these deposits is only vaguely understood, stratigraphic units across different landforms were not correlated in a detailed fashion. Moreover, the lack of access to these deposits at depth in trenches did not facilitate detailed examination and profiling, which would have revealed clear stratigraphic relationships and allowed for a more definitive correlation. As such, the categories listed above are used as a conceptual framework for discussing the subsurface stratigraphy identified in the project area. In the descriptions below, the numbering (roman numerals) of stratigraphic units is consistent within each trench described, but does not necessarily apply to the units

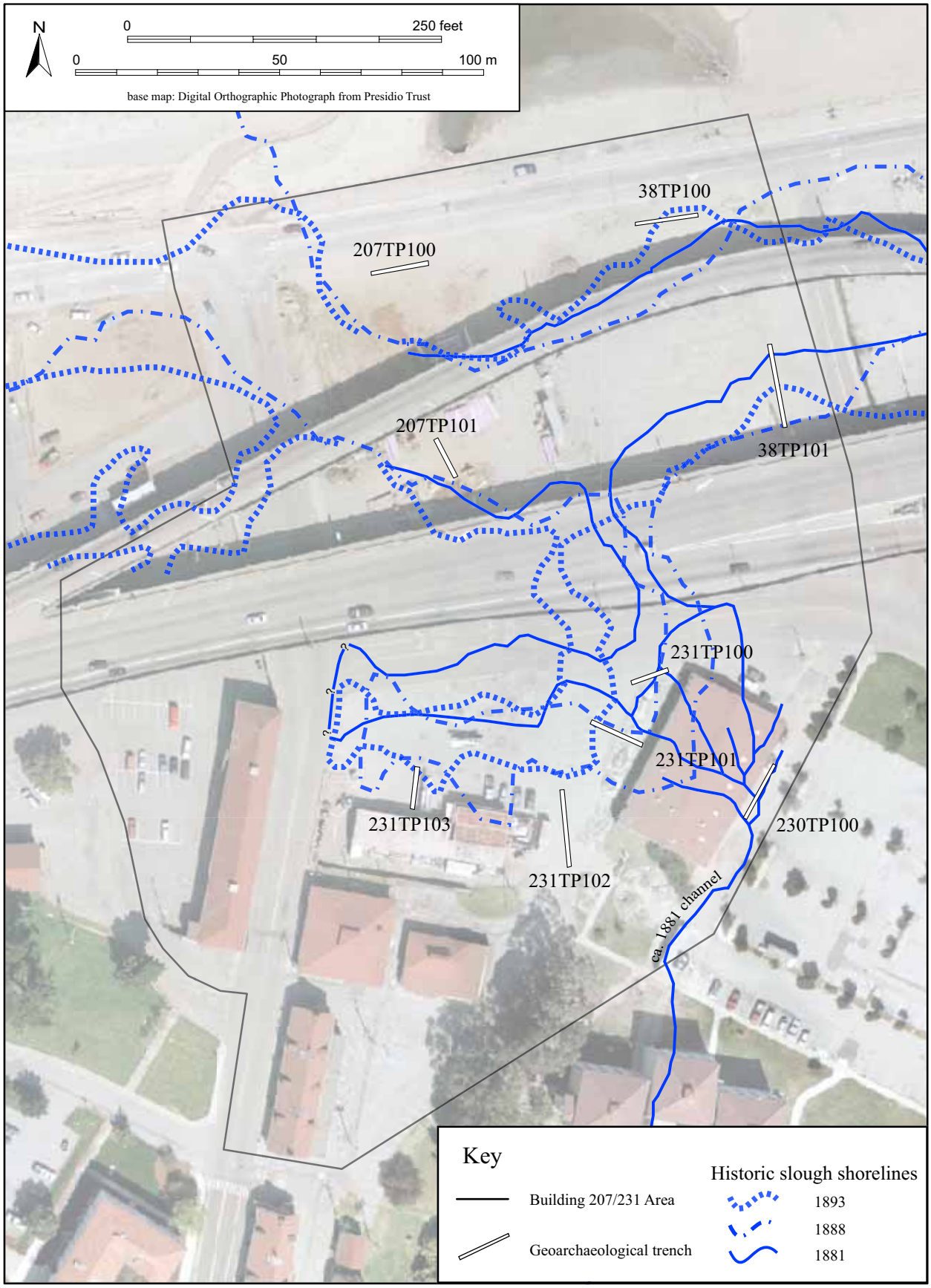


Figure 4. Geoarchaeological trenches in relation to historic slough shorelines

identified in other trenches in the area. It should also be noted that the lack of access to these deposits at depth in trenches, combined with frequent sidewall collapses, may have led to minor discrepancies between ASC and MACTEC trench descriptions.

Dune Deposits

At least two, perhaps as many as three, strata of dune deposits were identified during field investigations. While dune deposits were exposed in other trenches (including 38TP100, 230TP100, 231TP100, and 231TP103), Trench 231TP102 exemplifies the dune stratigraphy observed and appears to have the greatest time depth (Figure 5). The oldest and deepest dune deposit in Trench 231TP102 is noted as Stratum I. It is comprised of a light brown to reddish brown sand and appears relatively well-developed, exhibiting a 4Co horizon with few to common, soft, oxidized nodules. Because Stratum I does not exhibit a 4Ab horizon, it appears to have been truncated by erosion. Overlying Stratum I is another dune deposit, Stratum II, which exhibits 3Ab and 3C horizons. The 3Ab horizon is comprised of brown sand with abundant fine roots and a weak granular structure, while the 3C horizon is comprised of bluish gray sand with a single-grain structure. The uppermost dune deposit, Stratum III, exhibits 2Aib and 2C horizons. The 2Aib horizon is characterized by black sandy clay with abundant fine roots, while the 2C horizon is characterized by bluish gray to brown sand with a single-grain structure. The approximate depths of these strata and horizons are found on Figure 5. Based on its pedogenic development and stratigraphic position, Stratum I may be Middle to Late Holocene in age, while Strata II and III, based on their weakly developed soil profiles and stratigraphic positions, represent later episodes of aeolian deposition that likely date to the Late Holocene or historic period. The dune deposits exposed in Trench 231TP102 are overlain by fill deposits (described below) about 1.8 m (5.9 ft.) to 2.3 m (7.5 ft.) below surface.

Beach/Slough Interface Deposits

Primarily an alluvial/littoral unit with re-worked dune sands, beach/slough interface deposits consist of interfingered layers of clay and sand, or deposits characterized by a fining-upward textural sequence, or deposits of sandy clay. Based on their proximity to the watercourse that drains Tennessee Hollow, some beach/slough interface deposits in trenches in the CAP Site (Figures 3 and 4) may also include delta sediments. Interfingered layers of clay and sand were identified in Trenches 230TP100, 231TP100, and 231TP101 (Figure 5). Only in the latter were the sand and clay layers of sufficient thickness to be measured, given the lack of access to the trench at that depth. Beach/slough interface deposits characterized by a fining-upward textural sequence or a texture of sandy clay were noted in Trenches 38TP101 and 207TP101. The beach/slough interface deposits exposed in Trench 38TP101 contain common whole and fragmentary clamshells (based on shells identified in other trenches, probably *Macoma nasuta* or *Tresus nuttalli*, among others). The beach/slough interface deposits usually exhibit multiple C horizons (2C, 3C, etc.) and/or an Aib horizon consisting of an organic rich, peaty layer. In sum, the deposits display a high degree of horizontal and vertical

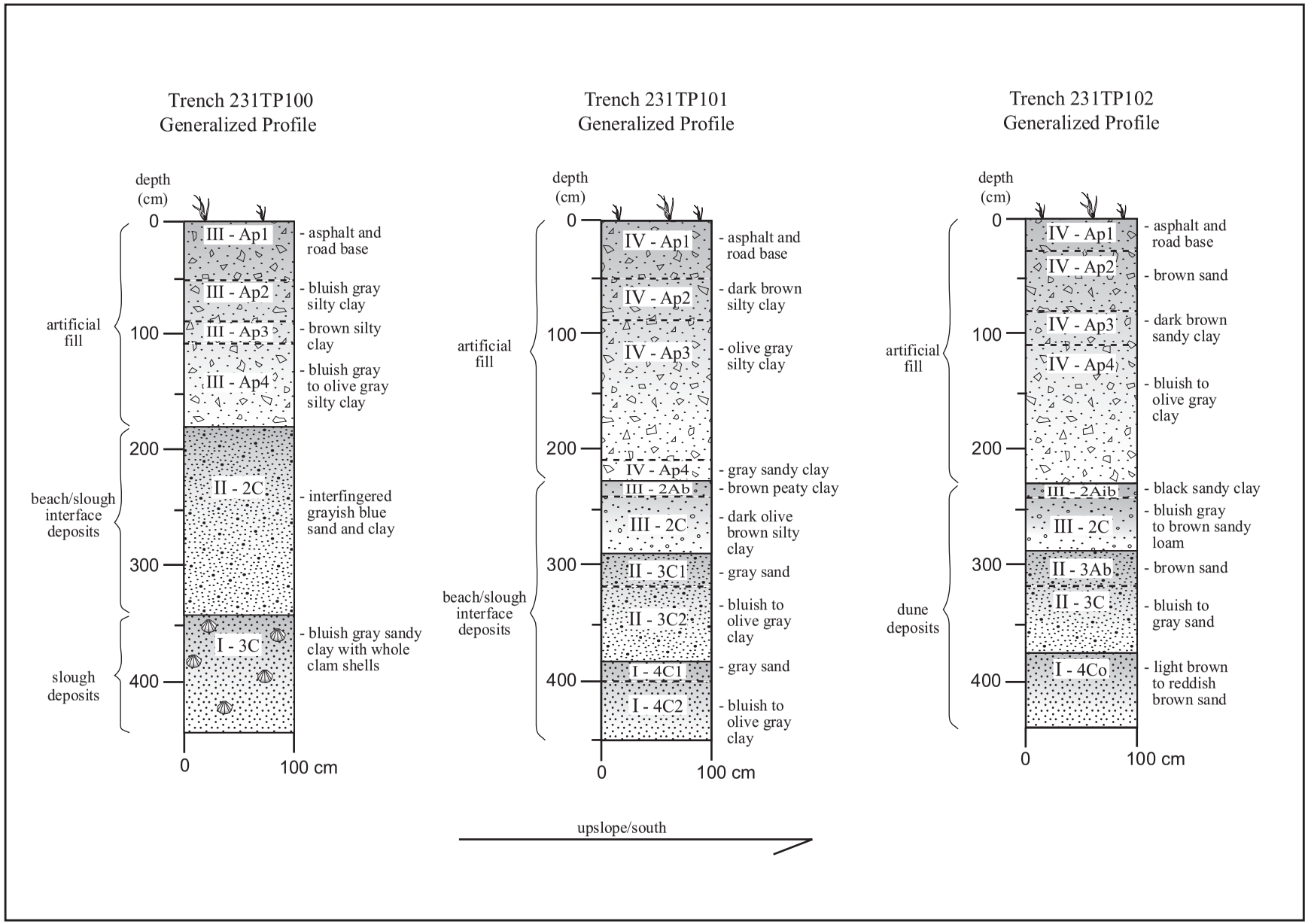


Figure 5. Stratigraphy of the geoarchaeological trenches in the CAP site

variability, as illustrated in Figure 5. This variability is wholly consistent with the formerly dynamic nature of the geomorphic setting in the project area.

Slough Deposits

Slough deposits are exclusively alluvial, relatively thick (about 1m [3.3 ft.] or greater) and consist of dark olive-gray to olive-brown clay. Such deposits were found in Trenches 230TP100 and 231TP100. In the latter, the slough deposits also contained common whole and half clamshells, identified as *Macoma nasuta* and *Tresus nuttalli*. Slough deposits exhibit a relatively thick 4C horizon with massive structure and are overlain by beach/slough interface deposits in the subsurface survey trenches. The slough deposits range in depth from 3.1 to 3.9 m (10.2 to 12.8 ft.) in Trench 230TP100 and from 3.4 to 4.4 m (11.2 to 14.4 ft.) in Trench 231TP100. Excavations did not penetrate through the slough deposits in order to avoid puncturing the bay mud as required by the investigation Work Plan (Appendix D).

Fill Deposits

Deposits of fill form the surface at all trench locations in the CAP Site. At least three, and at most four, horizons (Ap1 through Ap4) of fill were identified during the field investigations. These deposits vary widely in character. The fill deposits are located at the surface to depths ranging from 1.8 m (5.9 ft.) in Trench 231TP100 to 2.9 m (9.5 ft.) in Trench 207TP101.

LANDSCAPE HISTORY

Based on the known timing of regional landscape changes (such as sea level rise) and on relative soil development, the oldest aeolian deposit in the CAP Site is estimated to have been deposited in the Early to Middle Holocene, while the youngest aeolian deposits clearly date to the Late Holocene or historic period. The maximum age of the aeolian deposits is constrained to a point after which eustatic sea-level change caused sea levels to rise sufficiently to enter the San Francisco Bay and deposit beach sands that served as a sediment source for dunes on the San Francisco peninsula, probably during the Early Holocene. The maximum age of slough deposits is also constrained by such a date, after which sea levels reached sufficient height to locally inundate portions of the dune deposits, probably the interdune troughs. A radiocarbon date of 5040 $\pm$ 60 cal years B.P., obtained on peat from a location about 400 m (1,312 ft.) west of the CAP Site at a depth of 1.8 m (5.9 ft.), may represent this early period of inundation (Jones & Stokes 2002). While the exact timing of either the earliest slough or dune deposits remains unclear because dune deposits can migrate upslope, it seems likely that the earliest slough deposits post-date the earliest dune deposits. Apart from the soil immediately underlying fill, two buried soils were noted in the dune deposits exposed in the southeastern trenches. The deepest appears truncated and was buried as a result of increased aeolian activity, likely during the Late Holocene.

The interfingered beach and slough deposits were formed by a combination of shore and near-shore processes in a relatively active geomorphic setting. These varied deposits represent periods of slough expansion, perhaps as a result of increased precipitation, or a change in the boundaries of the slough. The interfingered beach and slough deposits also likely represent delta deposition at the point where the stream that drains Tennessee Hollow entered the slough (Figure 4). Given the slough's location in unconsolidated aeolian deposits, its exact boundaries may have shifted fairly frequently in response to changes in wind direction and velocity, or increased precipitation and more intense winter storms. Changes in such environmental conditions would also likely result in a corresponding expansion or contraction of the dunes surrounding the slough, or of the slough itself. Nevertheless, the documentation by this study of dune deposits in the Building 207/231 Area's northern and southern portions, and of shell-laden slough deposits in its central portion, lends credence to the general accuracy of the slough boundaries depicted on late 19th-century maps (Figure 4). Finally, fill was deposited in historic times as a result of activities related to military use of the area, as well as for the Panama Pacific International Exposition.

IDENTIFIED ARTIFACTS BY TRENCH LOCATION

Artifacts identified in the trenches are described below. The catalog describing all artifacts and identifying those collected is in Appendix C.

Trench 38TP100

No artifacts were encountered in this trench.

Trench 38TP101

From a depth of 0.8 to 2.3 m (2.5 to 7.5 ft.) below the asphalt ground surface there were alternating layers of fill atop a layer of peat. The alternating fill layers contained some demolition rubble, including terra-cotta sewer tile sherds, and a few artifacts, including a colorless glass milk-bottle finish fragment; white improved earthenware sherds; a porcelain tube insulator; and small hexagonal tiles.

Trench 207TP100

The upper 1 m (approximately 3 ft.) of fill at the east end of the trench sat atop a buried macadam roadway. The roadway had previously been cut by excavation. There was landscape fabric near the west end of the trench at a depth of 2 m (or about 6 ft.) below the modern ground surface. Milled lumber was found at depths of about 2m (6 to 7 ft.) below the ground surface. Several artifacts were found in the uppermost redeposited fill layer, along with some brick bats and a large, rounded stone, probably used as a landscaping or building material. All of the artifacts were consistent with a late-19th- to early-20th-century association. The collection consisted of a body sherd from a large white improved earthenware pitcher; a molded swirl porcelain hollow form sherd; a porcelain blue transfer-printed Phoenix pattern body sherd; a Chinese

handpainted, lobed, footed bowl sherd; and a light-green bottle body fragment. A collection such as this could be found throughout San Francisco.

Trench 207TP101

The upper fill of this trench was quite recent, based on the presence of a plastic wrapper marked "ZOO/ANIMAL CRACKERS/2 Grams of Fat". A deeper layer of fill, from 0.6 to 1.8 m (2 to 6 ft.) below the asphalt ground surface, contained various items of demolition rubble, including bricks, sewer tile, and basalt cobbles. Other artifacts included a porcelain knob insulator and a sherd from a thick-bodied, white improved earthenware hollow form with two thin green bands near the rim. This was likely a military item.

Trench 230TP100

Artifacts from the trench came from a fill layer 0.6 to 1.2 m (2 to 4 ft.) below the paved surface. Most items were building materials, such as bricks, nails, and porcelain knob and tube insulators. Some sherds of transfer-printed white improved earthenware and a sherd of blue handpainted, thick-bodied porcelain were also recovered.

Trench 231TP100

Some rubble was noted in the upper fill layer to a depth of about 1 m (3 ft.). A dense layer of clam shell was found at about 3.4 m (11 ft.) below the paved ground surface, indicating the historic-period location of the estuary.

Trench 231TP101

There were two layers with artifacts in the trench. The upper layer, from about 0.5 to 1 m (1.5 to 3 ft.) deep, contained pieces of ferrous metal. The lower fill at the groundwater level, about 7 ft. deep, contained some milled lumber and wire nails. The artifacts appeared to be at the interface of an old ground surface above a root mat and peaty clay. None of the observed artifacts were catalogued.

Trench 231TP102

Artifacts within this trench were within the upper 1 m (3 ft.) of fills. Two bottle fragments were marked. A hobble-skirt Coca-cola bottle base was embossed "SAN FRANCISCO/CALIF/S". This style of bottle was patented in 1915 and was the basic bottle type for decades (Paul and Parmalee 1973:37). An aqua-glass canning-jar body was marked "PA./.6 67 / 48". There was also the finish from a large green bottle, probably several gallons in size, and part of an aqua-glass club-sauce bottle. There were sherds from a green-glazed white improved earthenware vessel, and a bone artifact of unknown use. The latter, about 3 in. (7 cm) long and less than 1 in. (2.5 cm) wide, was flat with one pointed and one rounded end; it may have served as a stay in a tailored uniform.

Trench 231TP103

A soda-water bottle body and base fragment appeared to be from about 2 m (6 to 7 ft.) in depth, above a buried A horizon soil. The base of the bottle was embossed "S.F."; it dates from 1898 to 1906 (Markota and Markota 1994:106).

Discussion

With a few noted exceptions, the historic artifacts found in the lower or earlier fills throughout the project area are consistent with the majority of the filling episodes occurring either about 1895 for construction of the Quartermaster facilities or about 1911 for the PPIE. During one or perhaps both of these events flotsam from the estuary and other surface materials from the Presidio were buried to level the ground surface in and around the marsh. A majority of the artifacts recovered have production spans that overlap both of these major filling episodes. Most of the artifacts lack diagnostic attributes—such as maker's marks or distinctive, short-lived patterns— that would help determine or refine the date of filling for specific fill layers. Since the demolition of the PPIE complex, the built environment has continued to evolve, with a myriad of abandoned sewer lines running underground throughout the CAP Site and evidence of numerous episodes of construction and demolition, or cutting and filling, most notably in Trench 207TP100 and including the trenching for this project. One artifact recovered has a narrow, relatively early production range, suggesting that it may predate the PPIE: the 1898 to 1906 soda-water bottle from 231TP103. The only material encountered that clearly predates the PPIE, however, is the dense layer of clam shell that represents the early historic-period estuary, prior to the construction of the Quartermaster's complex. In most cases, the artifacts recovered were of insufficient quantity and lacked the diagnostic attributes necessary to determine which layers in a given trench were associated with either the 1895 or 1911 filling episodes.

CONCLUSIONS AND RECOMMENDATIONS

The goals of this project were to document the presence or absence of cultural deposits exposed in the subsurface survey trenches and to provide an account of the depositional history of the project area. At least two buried soils formed in dune deposits that are Holocene in age were discovered as a result of this study. The first buried soil represents the surface that was exposed before the massive inputs of artificial fill beginning in the 1870s but accelerating in the early part of the 20th century. The second buried soil was probably deposited sometime during the Late Holocene, and was available for human occupation before it was buried. The third and deepest buried soil is probably Middle Holocene-age; it appears to have been truncated by erosion. Buried soils in dune deposits were found in Trenches 38TP100, 230TP100, 231TP100, 231TP103, and 231TP102, and may be laterally extensive within the Building 207/231 Area outside of the slough boundaries depicted in Figure 4. Further testing, however, would be required to positively confirm their presence in areas not tested during the course of this study.

Although a few isolated historic-period artifacts were recovered by this study, no deposits of sufficient integrity, volume, or association to be of research value were identified within the CAP Site. Any such deposits are unlikely to have survived 20th-century demolition and clean-up episodes. While no prehistoric artifacts were noted by this study, it is possible that as-yet-unidentified archaeological remains are associated with one or both of the upper two buried Holocene-age soils. It is also possible, but unlikely due to its truncation, that archaeological remains may be encountered in association with the deepest buried soil. The upper two Holocene-age soils, however, appear weakly developed and formed because they were located at the surface of a relatively stable landform for perhaps only a few hundred years; thus they were available for human use and occupation for only a limited time period.

There is a low potential that buried archaeological remains are present within the CAP Site. Based on the findings of this study, no further archaeological work is recommended at this time. If project plans require earthmoving in areas not examined by this study, then additional subsurface exploration may be warranted. Finally, it is recommended that appropriate personnel spot-check the proposed ground-disturbing activities during CAP remedial actions to insure that potentially buried archaeological resources, either historic or prehistoric, are not inadvertently impacted.

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APPENDIX A

Draft MACTEC Environmental Field Report

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Draft
Environmental Field Report
Subsurface Geoarchaeological Survey of the Building 207/231 Area
Presidio of San Francisco, California

Prepared for

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This document was prepared by MACTEC Engineering and Consulting, Inc. (MACTEC) at the direction of the Presidio Trust (Trust) for the sole use of the Trust, the National Park Service, and regulatory agencies, the only intended beneficiaries of this work. No other party should rely on the information contained herein without the prior written consent of the Trust and MACTEC. This report and the interpretations, conclusions, and recommendations contained within are based in part on information presented in other documents that are cited in the text and listed in the references. Therefore, this report is subject to the limitations and qualifications presented in the referenced documents.

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DISTRIBUTION

1.0 INTRODUCTION

This Environmental Field Report (report) for the Subsurface Geoarchaeological Survey of the Building 207/231 Area, Presidio of San Francisco, California, has been prepared by MACTEC Engineering and Consulting, Inc. (MACTEC) on behalf of the Presidio Trust (the Trust). This report presents the field results of environmental oversight activities conducted by MACTEC the week of January 23, 2006, during which a subsurface geoarchaeological survey was conducted by MACTEC's subcontractor, the Anthropological Studies Center of Sonoma State University (ASC) in areas identified for corrective action in the *Draft Corrective Action Plan, Building 207/231 Area, Presidio of San Francisco, California* (Draft CAP; *MACTEC, 2005*). This report accompanies ASC's summary of the geoarchaeological results of the survey *Subsurface Geoarchaeological Survey of the Building 207/231 Area, Presidio of San Francisco, City and County of San Francisco, California*, and also presents records provided by the Trust's subcontractor Environmental Remediation/Resources Group, Inc. (ERRG) of trench backfilling and offsite soil disposal activities.

This report (1) describes the scope and purpose of the fieldwork; (2) provides background information on subsurface conditions; (3) summarizes the general field procedures and approach; (4) describes the specific field survey methods and sampling techniques used; and (5) presents the results of field observations and soil sampling conducted.

1.1 Scope of Environmental Field Oversight

MACTEC performed environmental field oversight of the Subsurface Geoarchaeological Survey for the Building 207/231 CAP Area between January 23 and January 27, 2006. The fieldwork consisted of excavation of 9 trenches within 9 different locations at the Site by the Trust's subcontractor ERRG, and investigation and collection of any cultural or historical artifacts encountered within the trenches by ASC.

MACTEC's designated Site Safety and Health Officer (SSHO), Anna Henke, was responsible for implementing the Site Safety and Health Plan (SSHP) prepared by MACTEC for fieldwork to be performed by MACTEC and ASC (*MACTEC, 2006*). The Trust was responsible for the Health & Safety (H&S) management of their own and/or National Park Service (NPS) personnel and subcontractors that conducted work onsite.

MACTEC's SSHO, Anna Henke, also performed environmental sampling (collection of soil samples for offsite laboratory analysis) from 2 trenches where potentially contaminated soils were encountered during the trench excavations. The purpose of the environmental sampling was to satisfy regulatory agency concerns regarding the potential presence of highly contaminated materials or wastes that may have been encountered in trench excavations, and notify the agencies within 24 hours if such contamination was detected. No highly contaminated materials or wastes were identified in any of the 9 trenches excavated.

MACTEC's field oversight involved the following tasks:

- Full-time daily attendance by staff in the role of environmental oversight, designated SSHO, and environmental sampler during all fieldwork activities, and coordination with Trust, subcontractors, (and regulatory agencies as necessary).

- Attendance at the onsite kickoff meeting; holding daily H&S tailgate meetings; performing H&S monitoring and other designated SSHO responsibilities as specified in the SSHP (*MACTEC, 2006*).

- Collection and preparation of soil samples for offsite laboratory analysis for the suite of potential chemicals of concern (COCs) identified in the Draft CAP and SSHP in areas of potential contamination within excavated trenches (*MACTEC, 2005, 2006*).

1.2 Purpose of Fieldwork

The Building 207/231 CAP Site vicinity is an area of prehistoric archaeological sensitivity. The purpose of the fieldwork was to conduct a Subsurface Geoarchaeological Survey in areas of the Building 207/231 Area (site) prior to excavation of significant quantities of contaminated soil proposed as part of corrective actions recommended in the *Draft Corrective Action Plan, Building 207/231 Area, Presidio of San Francisco, California* (Draft CAP; *MACTEC, 2005*). The survey was conducted in order to comply with Section 106 of the National Historic Preservation Act (NHPA), as amended, which requires consideration of the effects of an undertaking on properties eligible for inclusion in the National Register of Historic Places *(MACTEC, 2005)*.

The Draft CAP proposed a pre-remediation archaeological investigation be conducted to avoid or minimize potential adverse impacts to any unidentified, potential historic properties or eligible archaeological resources that might be affected by the proposed CAP activities. MACTEC requested ASC develop a geoarchaeological subsurface survey work plan and protocols for handling potentially contaminated artifacts (*ASC, 2005a, b*). The need for a subsurface survey was prompted in part by the fact that the present ground surface at the site consists of artificial fill and man-made structures, which have effectively buried the former "natural" ground surface. Thus, any intact archaeological deposits in the project area would be buried. Given these substantial landscape changes, a subsurface geoarchaeological survey was the most efficient and effective way to identify buried archaeological deposits. At the same time, the survey could assess the general structure, composition, integrity, and stratigraphic sequence of the natural and/or cultural subsurface deposits.

The general goal of the survey was to characterize past human use of the project area in relation to the events and/or conditions that lead to the formation of the present landscape. The survey was intended to achieve this by revealing former landscapes and identifying prehistoric or historic-era archaeological remains present. Because human occupation in the region is generally accepted to span the last 13,000 years, the geoarchaeological survey was focused on Holocene and late Pleistocene deposits.

1.3 Site Description

The Site comprises approximately 8 acres of land located in the northeast portion of the Presidio of San Francisco, adjacent to the Crissy Marsh and bisected by the Doyle Drive/Highway 101 overpasses (Plates 1 and 2).

Site History

(from Draft CAP; MACTEC, 2005)

The Presidio, including the Building 207/231 Area (Site), has a long history of use that extends from prehistoric times through a period of military uses through to the present non-military mixed use. In the prehistoric period, the Site originally comprised a large estuary of saltwater marshes and sloughs, as well as a freshwater lagoon. The Tennessee Hollow Riparian Corridor flowed northward, bisecting the Site and draining into the marsh. The majority of this marsh and slough system has been filled in with soils and other materials over time in order to expand the usable land surface of the area. Some of the materials used as fill constitute archaeological artifacts or cultural resources; e.g., middens and gravesites have been encountered at various locations throughout the Presidio, including locations near and within

the area of the Site. The possibility of encountering cultural resources within the area of the Site is considered moderate to high.

Current Site Conditions and Planned Uses

(from Draft CAP; MACTEC, 2005)

In recent times, the Site was primarily used by the Army for servicing and fueling vehicles, and contained two service/gas stations. In addition, the Site had garages, a dry cleaning facility that used Stoddard solvent (petroleum hydrocarbon distillate), and fuel oil distribution lines. Previous corrective actions included removal and over-excavation of underground storage tanks (USTs), hydraulic lifts, and a fuel distribution system (FDS) line. The garages, USTs, and fuel lines have since been removed and the Site currently consists of buildings, paved parking areas, roadways, and some landscaping. Several above- and under-ground utilities, both in-service and abandoned, transect the Site.

Potential planned uses of the Building 207/231 Area may include the extension of Crissy Marsh adjacent to an historic wall located between Buildings 231 and 228; the restoration of the freshwater Tennessee Hollow Riparian Corridor; and replacement of the Doyle Drive/Highway 101 overpasses, now nearing the end of their useful lifespan. Buildings 228, 229, and the historic wall are designated for preservation as historic resources. The buildings currently present on the Site are shown on Plates 1 and 2. The corrective action alternatives developed in the Draft CAP consider these resources and potential planned land uses for the Site.

Geologic and Hydrogeologic Conditions

(from Draft CAP; MACTEC, 2005)

The Site gently slopes to the north with elevations ranging from approximately 10 to 25 feet above the Presidio lower-low water vertical datum (PLLW). Investigations performed by the Army in the 1990s and more recently by the Trust, show that the Site is underlain by unconsolidated sediments of the Colma formation. Colma sediments are overlain by fill of variable thickness that ranges up to about 15 feet thick.

Previous investigations indicate the main water-bearing zones in the Building 207/231 Area are the shallow, upper intermediate, and lower intermediate zones. These three relatively permeable, sandy, water-bearing zones are separated from one another by two horizons of less permeable, clayey, fine-grained estuarine deposits (Bay Mud) observed across the Crissy Field Groundwater Area. The fine-grained estuarine deposits appear to pinch out south of Building 229, where Quaternary sedimentary deposits (including Pleistocene Colma Formation [older marine sands]) and Quaternary stream deposits are encountered at elevations above high sea level stands in San Francisco Bay. The shallow groundwater zone consists of saturated portions of the fill and, where present, the shallow sand. Groundwater in the shallow groundwater zone occurs under unconfined conditions and groundwater flow is to the north-northwest. The intermediate groundwater zone consists of the upper intermediate sand and lower intermediate sand. Groundwater in the intermediate zone is semi-confined and groundwater flow is generally to the north. Vertical gradients between the intermediate and shallow groundwater zones are consistently upward.

Fill, shallow sand, and shallow groundwater zones occur in the top 15 feet of the Site based on previous subsurface investigations at the Building 207/231 Area. With the exceptions of the Shallow Sand and the Shallow/Intermediate Aquitard, these units are generally continuous across the Site.

Cultural and Historic Resources

(from Draft CAP; MACTEC, 2005)

The Site is situated in the Presidio of San Francisco National Historic Landmark District, an historic site composed of historic landscapes, buildings, archaeological sites, and objects. As discussed above, prehistoric and historic sensitivity zones and cultural/archaeological resources have been identified within the area of the Site. Significant historic and prehistoric archaeological properties have been identified adjacent to the Site (CA-SFR-129 and CA-SFR-6). The former shoreline of the marsh and slough cuts across the Site. In addition, the location and configuration of the marsh and slough varied with time, and the confluence area between marsh and freshwater drainages would be coincident with areas where prehistoric occupation would occur. Consequently, prehistoric cultural resources might be present anywhere within the Building 207/231 Area, which resides in the delta of the Tennessee Hollow drainage.

The activities associated with the filling of the marsh and sloughs, the construction of the historic structures, and the activities associated with the use of the structures result in a moderate to high probability that historic period cultural resources might be encountered during intrusive remedial activities anywhere within the Building 207/231 area. Therefore, the corrective action alternatives developed for the Draft CAP include identification and protective measures to be implemented in the event that cultural resources are encountered. As discussed above, specific finds have occurred within the Site.

These resources are protected under the National Historic Preservation Act (NHPA) and Programmatic Agreement between the Trust, California Office of Historic Preservation, the National Park Service (NPS), and the Advisory Council on Historic Preservation. Therefore, corrective action alternatives developed under the Draft CAP considered these resources and the effect the requirements of the NHPA may have on the evaluation and implementation of corrective action alternatives.

Accordingly, potential impacts to cultural and historic resources that are known to be or may be present within these remedial units (RUs) during implementation of corrective action alternatives would be minimized by (1) conducting a Pre-Construction Archaeological investigation (the Subsurface Geoarchaeological Survey); (2) requiring archaeological monitoring during intrusive activities to prevent adverse impacts; and (3) developing and recommending corrective action alternatives for RUs with identified historic resources that would not adversely affect their integrity (e.g., capping instead of excavation).

Chemical Contamination

(from Draft CAP; MACTEC, 2005)

The Draft Final CAP for the Site is currently under review for approval by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). In most cases, the selected remedial actions in the Draft and Draft Final CAP consist of removing the contaminated fill to expose uncontaminated native soil below. In limited areas where contamination is inaccessible due to the presence of historic buildings or other resources, the soil will be left in place and surface cover (e.g., pavement or building foundation) will be maintained.

Cleanup levels were developed for soil and groundwater using the most stringent (lowest) of four different receptor scenarios: (1) Protection of Human Health, Residential Use; (2) Protection of Ecological Receptors, Buffer-Zone/Special Status; (3) Protection of Saltwater Ecological Receptors; and (4) Protection of Freshwater Ecological Receptors. Based on the occurrence and concentrations of

chemicals in soil and groundwater at concentrations exceeding cleanup levels, the following chemicals of concern (COCs) were identified:

Chemicals of Concern That May be Present in Soil

- Petroleum hydrocarbons – Total Petroleum Hydrocarbons (TPH) as gasoline, diesel, fuel oil;
- Volatile Organic Compounds (VOCs) – benzene, toluene, ethylbenzene, xylenes (BTEX), methyl tertiary butyl ether (MTBE), tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride (VC), bromobenzene, methylene chloride (MeCl);
- Polynuclear Aromatic Hydrocarbons (PAHs) – anthracene, acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(b+k)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene, pyrene;
- Polychlorinated Biphenyls (PCBs) and Pesticides – Arochlor 1016, 4,4'-DDD; and
- Metals – arsenic, chromium, cobalt, copper, lead, mercury, silver, and zinc.

Chemicals of Concern That May be Present in Shallow Groundwater

- Petroleum hydrocarbons – TPH as gasoline, diesel, fuel oil;
- VOCs – BTEX, MTBE, bromobenzene, 1,2-dichlorobromine (1,2-DCB), 1,2-dichloroethane (1,2-DCA), PCE, TCE, VC;
- PAHs – benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(b+k)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene;
- PCBs – Arochlor 1016; and
- Metals – arsenic, lead, nickel, vanadium, and zinc.

Data from previous investigations were evaluated with respect to applicable cleanup levels to identify areas where chemicals were present at concentrations that could potentially pose a risk to human health, the environment, or drinking water quality. Based on this review, there are four general areas (Remedial Units or RUs) at the Site where chemicals of concern are present above cleanup levels where geoarchaeological trenching was conducted as shown on Plates 1 and 2:

(1) Former Building 207 fueling station and adjacent Former Building 208 in the northern portion of the Site;

(2) Former Buildings 38, 38-A, and garage oil station in the northeastern portion of the Site;

(3) Existing Building 231 and former service station complex in the central part of the Site; and

(4) Existing Building 230 adjacent to a former railroad spur loading dock in the eastern portion of the Site.

1.4 Project Description

A scope of work for MACTEC, the Trust, and their subcontractors was identified to provide personnel, services, materials, and equipment necessary to perform the following activities. A Site Safety and Health Plan (SSHP) was developed by MACTEC to address the mobilization and fieldwork activities associated with the Subsurface Geoarchaeological Survey identified in the Building 207/231 Corrective Action Plan Area (site) (*MACTEC, 2006*). Prior to commencement of fieldwork, all personnel were enrolled in appropriate medical monitoring programs and training programs as specified by the SSHP and the Trust's and/or their subcontractors' own health and safety plan, program and requirements.

In addition to environmental oversight by MACTEC and coordination by the Trust, the following subcontractors performed work at the Site:

MACTEC's Subcontractor

- Anthropological Studies Center of Sonoma State University (ASC)—Performed Subsurface Geoarchaeological Survey.

The Trust's Subcontractors

- Underground Service Alert (USA)—Performed underground utility clearance.
- Environmental Remediation/Resources Group, Inc. (ERRG)—Performed trench excavation, backfilling, and restoration.

The parties that performed the tasks listed below are identified in parenthesis.

Pre-Fieldwork Mobilization (Week of January 16, 2006)

- Mark and fence as appropriate the locations of planned exploration trenches and equipment staging areas (MACTEC, ASC, and Trust).
- Perform underground utility survey and mark utilities and locations (USA).
- Establish a wet screening station for artifact processing (ASC).

Fieldwork (Week of January 23, 2006; Remobilization by ERRG for Backfill Completion and Restoration Week of February 6, 2006)

- Perform contamination monitoring and sampling (MACTEC).
- Excavate exploration trenches (ERRG).
- Retrieve and process (clean as necessary) artifacts (ASC).
- Transfer artifacts to Presidio Archaeology Lab for cataloging, as necessary (ASC).
- Collect soil samples for offsite laboratory analysis (MACTEC).

- Backfill, compact, and re-pave exploration trenches (ERRG).

- Dispose of contaminated water, sediments, and personal protective equipment (ASC, MACTEC, ERRG, and Trust).

1.5 Report Organization

This report is organized as follows:

- Section 1.0, Introduction: Discusses the scope and purpose of the fieldwork; provides background information; and presents the report organization.

- Section 2.0, Environmental Oversight Field Activities: Describes the environmental oversight activities performed during the survey.

- Sections 3.0 through 11.0: For each of the nine trenches excavated, respectively, describes: Trench Descriptions; Geologic/Hydrogeologic Conditions; and Observation/Soil Sampling of Potential Contamination.

- Section 12.0: Presents a brief summary of the conclusions of environmental oversight activities conducted.

- Section 13.0, References: Presents a list of references cited in this report.

- Attachments A—E: Trench logs (Attachment A); field forms, logs, and records (Attachment B); laboratory analytical reports (Attachment C); data validation report (Attachment D); and trench backfill and offsite soil disposal records (Attachment E).

2.0 ENVIRONMENTAL OVERSIGHT FIELD ACTIVITIES

This section summarizes the environmental oversight activities performed in the field by MACTEC as part of the Subsurface Geoarchaeological Survey. Work was performed in accordance with the site-specific documents listed below that provided guidance for the scope and implementation of operational activities:

- *Site Safety and Health Plan, Subsurface Geoarchaeological Investigation, Building 207/231 Area, Presidio of San Francisco, California*, January 13, 2006 prepared by MACTEC Engineering and Consulting, Inc. for fieldwork to be performed by MACTEC and ASC (*MACTEC, 2006*). The Trust was responsible for the Health & Safety (H&S) management of their own and/or National Park Service (NPS) personnel and subcontractors that conducted work onsite "(SSHP; *MACTEC, 2006*)".

- *Draft Work Plan for Subsurface Geoarchaeological Survey of the Building 207/231 Area, Presidio of San Francisco, City and County of San Francisco, California*, November 14, 2005, prepared by Anthropological Studies Center of Sonoma State University for MACTEC Engineering and Consulting, Inc. and The Presidio Trust "(Work Plan; *ASC, 2005b*)".

- *Protocols for Contaminated Archaeological Artifacts on Presidio Park Lands*, September 21, 2005, prepared by Anthropological Studies Center of Sonoma State University for MACTEC Engineering and Consulting, Inc. and The Presidio Trust "(Protocols; *ASC, 2005a*)".

Components of the fieldwork conducted by MACTEC are described in the following sections.

2.1 Clearance and Trench Location Surveys

Prior to mobilization and commencement of trench excavation activities the week of January 23, 2006 and through the duration of the trenching work, the Trust and their subcontractors marked and cleared proposed trenching locations. Proposed trenching locations were marked with white spray paint, then cleared for subsurface utilities. In areas where pavement was absent, the trenching locations were marked with pin flags. Following field marking of the proposed trenching locations, subsurface utility clearance was performed at each of the proposed trench locations. As part of the clearance, identified underground utilities were marked in the vicinity of each of the proposed trench locations. In addition, clearance personnel from the Trust marked active utility lines. As part of the clearance process, the Trust's subcontractor, Underground Service Alert (USA) verified the locations of active utility corridors.

Prior to trenching, the Trust obtained excavation permits though the Trust utilities department. In addition, the Trust obtained a Certification of Compliance with the National Historic Preservation Act under the Programmatic Agreement for Operations and Maintenance from the Federal Preservation Officer. The proposed Work Plan (*ASC, 2005b*) was reviewed by a team of Trust and NPS resource specialists (N^2) and was found to have No Adverse Effect on historic properties with the following stipulations:

- If objects were discovered during work that had potential to be historic or part of the original building(s), Mike Stoyka, Michael Meyer, Graham Dalldorf or Chris Caputo, the Sonoma State University archaeologists, were to be notified immediately to ensure that the objects were treated appropriately, documented, and stored as needed.

With respect to these stipulations, no historic or culturally significant artifacts were found during the investigation.

2.2 Health and Safety Monitoring

The following is a summary of activities performed by MACTEC's designated Site Safety and Health Officer (SSHO), Anna Henke, who was responsible for implementing the Site Safety and Health Plan (SSHP) prepared by MACTEC for fieldwork to be performed by MACTEC and ASC (*MACTEC, 2006*). The Trust was responsible for the H&S management of their own and/or NPS personnel and subcontractors that conducted work onsite. Attachment B contains copies of all field forms, logs, and records collected by MACTEC during environmental oversight activities.

- Full-time daily attendance, H&S monitoring and coordination with Trust, subcontractors, (and regulatory agencies as necessary).
- Conducted onsite kickoff meeting and held daily H&S tailgate meetings on site-specific emergency response training and information such as evacuation meeting points, potential emergencies, and onsite hazards.
- Performed H&S monitoring specified in the SSHP for dust and air emissions for potential chemicals of concern (COCs) identified in the SSHP during field activities; no Action Levels and/or Permissible Exposure Levels (PELs) were exceeded during air monitoring activities.
- Selected and enforced the Personal Protective Equipment (PPE) ensemble based on H&S monitoring of the potential hazards; Level D PPE (modified) was determined to be appropriate for all field activities. Oversaw PPE decontamination and disposal activities.
- Oversaw staging of equipment and soils and equipment decontamination activities.
- Collected signed SSHP acknowledgement forms provided by the MACTEC, and copies of HAZWOPER training and annual refresher course certifications and medical evaluations from all site personnel prior to commencing work activities at the Site.
- Maintained a Visitors Log and required visitors to sign in with the SSHO onsite before entering the site and go through the necessary safety briefing of potential hazards.

2.3 Trench Excavations

During the course of the survey, nine shallow trenches were excavated at the site that are described in Sections 3.0 through 11.0. Trench depths were determined in the field by (1) the trench's ability to stay open without sidewalls collapsing; (2) the thickness of the fill (non-native) soils; and (3) penetration into native soils. The general approach was that trenches were opened up to a safe depth of 4 feet below ground surface (bgs), and personnel examined the shallow soils by entering the trench. Generally, fill soils were encountered at this depth. The trenches were generally unstable once they penetrated deeper into the saturated zone, or extended into loose sands. Usually one end of the trench, and sometimes both ends, were selected for exploration at deeper depths. The deep portions of the trenches rarely stayed open long before the sidewalls began collapsing.

The trench locations are shown on Plates 1 and 2, and trench logs are presented in Appendix A. Trench excavations were lithologically logged in accordance with the ASTM D2488 method for description and identification of soils and standard geologic logging techniques. After the excavations were logged and sampled, they were backfilled as described in Attachments D and E.

Field deviations from the work plan regarding trench backfill activities are summarized in Attachment E (Trench Excavation, Backfill and Offsite Soil Disposal Records). In general, in paved areas where

asphalt was to be replaced, base rock was used instead of saturated trench spoils as backfill in the top portions of the trenches because the base rock was determined by the Trust's contactor (ERRG) to be the preferred material for compacting and providing an acceptable surface for repaving the trench locations with asphalt.

2.4 Soil Sampling

Trench Excavation Soil Samples

The only protocol implemented during trench excavation soil sampling that deviated from the Trust's *Presidio-Wide Quality Assurance Project Plan, Sampling and Analysis Plan, Presidio of San Francisco, San Francisco, California* (QAPP; *Tetra Tech, 2001*) and standard operating procedures (SOPs) was to use larger stainless steel sampling tubes for sample collection instead of encore sampling tubes in the two trenches sampled (207TP100 and 230TP100) due to the presence of large-grained and saturated materials that would make the smaller, ½-inch diameter encore tube difficult to employ for representative sample collection.

Four soil samples were collected in areas of suspected contamination within trench excavations by pushing a clean stainless steel tube directly into the soil. Three (including one duplicate) of the soil samples were collected by driving the stainless steel tubes directly into the trench sidewalls at a depth of 4.0 feet bgs, and one sample from 9.5 feet bgs was collected from the bucket of the excavator.

Once the stainless steel tube was removed, the tube was sealed with Teflon sheets and plastic caps. Duplicate soil samples were collected adjacent to the primary samples following the same protocols.

Soil retrieved from the excavations were screened for VOCs with a photoionization detector (PID), and noted on field forms provided in Attachment B.

Field quality control (QC) samples that were collected as part of this investigation include the following:

- Trip Blanks – One trip blank was submitted for chemical analysis.
- Field Duplicates – One field duplicate soil sample was collected for chemical analysis.

All sample containers were labeled and placed in plastic bags. The samples were stored in coolers with ice and transported under chain of custody control to Curtis & Tompkins Analytical Laboratory in Berkeley, California.

Stockpile Soil Samples

The protocols ERRG implemented during stockpiled soil sampling that deviated from the Trust's *Presidio-Wide Quality Assurance Project Plan, Sampling and Analysis Plan, Presidio of San Francisco, San Francisco, California* (QAPP; *Tetra Tech, 2001*) and standard operating procedures (SOPs) included (1) collecting a four-point field composite sample, (2) selection of a sample identifier that did not indicate it was a stockpile sample, and (3) reporting of the analytical results on a wet weight basis (rather than dry weight basis). Each part of the composite was collected from 4 separate quadrants of the stockpile from about 12 inches into the stockpile, the four composite samples were mixed in the field, and the sample was placed in a stainless steel tube and manifested for laboratory analysis; this method deviated from the QAAP protocols for stockpile sampling in that the composite was prepared in the field rather than by the laboratory. In addition, the sample identifier selected did not follow Trust protocols for identifying it as a stockpile sample. Therefore, the sample identification number and associated analytical data will be

entered in the Presidio database, and will be flagged with a qualifier to indicate it was a stockpile sample. The manifest and analytical results are included in Attachment E.

2.5 Laboratory Analysis

Laboratory analyses were performed by Curtis & Tompkins Analytical Laboratory in accordance with the *Presidio-Wide Quality Assurance Project Plan, Sampling and Analysis Plan, Presidio of San Francisco, San Francisco, California* (*Tetra Tech, 2001*) (QAPP). Soil samples collected were analyzed using the following test methods:

- Total Petroleum Hydrocarbons as Diesel and Fuel/Motor Oil (TPHd/TPHmo) (petroleum hydrocarbons in the C12-C24 range) – SW8015 Modified with silica gel cleanup (SW3630A).
- TPH as gasoline (TPHg) (petroleum hydrocarbons in the C7-C12 range) – SW8015 Modified.
- Volatile Organic Compounds (VOCs) – SW8260B.
- Organochlorine Pesticides (OCPs) – SW8081A.
- Polynuclear Aromatic Hydrocarbons (PAHs) – SW8270SIM.
- Polychlorinated Biphenyls (PCBs) – SW8082.
- Metals – SW 6010/6020-7000 Series.

Four soil samples (including one duplicate) were collected during trenching activities:

- Trench 207TP100—Two soil samples were collected at depths of 5.0 and 9.5 feet below ground surface (bgs).
- Trench 230TP100—One soil sample and one duplicate soil sample were collected at a depth of 4.0 feet bgs.

Soil sampling results from these two trenches are discussed in Section 5.3 (Trench 207TP100) and Section 7.3 (Trench 230TP100), respectively, and analytical data are summarized in Tables 1 and 2. The Laboratory Analytical Data Report for all samples is presented in Attachment B.

2.6 Data Validation of Laboratory Analyses

Data validation of Level III laboratory data packages was performed by DataVal Incorporated in accordance with the *Presidio-Wide Quality Assurance Project Plan, Sampling and Analysis Plan, Presidio of San Francisco, San Francisco, California* (*Tetra Tech, 2001*) (QAPP); the *U. S. Environmental Protection Agency Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999*; and the *U. S. Environmental Protection Agency Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004.*

The data were reviewed for holding times, surrogate recoveries, blanks, laboratory control samples (LCS), matrix spikes (MS), matrix spike duplicates (MSD), GC/MS tunes, performance evaluation mix (PEM) standards, inductively couple plasma (ICP) interference check standards, ICP serial dilutions, initial calibrations, continuing calibration verification (CCV) standards and internal standards.

The Data Validation Report is presented in Attachment C, which indicates overall, the data are usable as reported with any added qualifiers indicated.

2.7 Equipment Decontamination and Investigation Derived Waste

Excavation equipment such as shovels, rakes, and PPE were cleaned with stiff bristle brushes and nonphosphate soap solution, then rinsed with tap water using garden sprayers after each trench was completed. Soil sampling equipment was cleaned prior to each use by washing in a nonphosphate detergent solution, tap water rinse, and final deionized water rinse. Decontamination rinsate was mixed with the excavation-derived soil and returned to the trenches.

3.0 TRENCH 38TP100 AREA

The location of this trench is shown on Plate 1; the trench log is presented in Attachment A, Figure A-1.

3.1 Trench Description

Trench 38TP100 extended 40-feet in an east-west direction, sub-parallel to Mason Street. It was located 39-feet south of Mason Street and ended 85-feet west of Marshall Street. The depth of the excavation ranged from 6.5-8.0 feet below ground surface.

3.2 Geologic/Hydrogeologic Conditions

As shown on Figure A-1, review of lithologic logs for Trench 38TP100 indicate the area is underlain by poorly graded sand to 4 feet bgs with a lift of poorly graded gravel from 2-3 feet bgs. This sand and gravel was interpreted as fill material due to the presence of anthropogenic material, specifically terra cotta pipe fragments, a small vault-like structure that appeared to be a concrete inlet, and shell debris. Underlying the sand and gravel fill is a thin (0-1 foot thick), discontinuous, layer of sandy silt. The materials from the ground surface to 5 feet were interpreted as fill composed of poorly graded sand with lenses of gravel and lean clay. No Bay Mud was encountered at these depths in the trench, and soils were generally moist.

From 5 feet bgs to the total depth of the excavation ranging from 6.5 to 8.0 feet bgs, a massive, poorly graded sand was encountered. The sand exhibited no anthropogenic materials and no inclusions or bedding structures were observed. This sand was interpreted as beach or dune sand.

3.3 Observations/Soil Sampling of Potential Contamination

The small vault-like structure that appeared to be a concrete inlet and surrounding materials observed in the trench shown on Figure A-1 had no significant odors, PID readings, or visual signs of potential contamination. Therefore, any possible connection between this inlet and potential contamination at the site were not found. Copies of photographs taken of the inlet during trenching activities have been included in Attachment A. No significant odors, PID readings, or visual signs of potential contamination were observed, measured, or identified during excavation and survey of the Trench 38TP100 Area; therefore, no soil samples were collected.

4.0 TRENCH 38TP101 AREA

The location of this trench is shown on Plate 1; the trench log is presented in Attachment A, Figure A-1.

4.1 Trench Description

Trench 38TP101 extended 64-feet in a north-south direction, sub-parallel to Marshall Street. It was located 32-feet west of Marshall Street, and ended 130-feet south of Mason Street. The depth of the excavation ranged from 4.0-14.0 feet below ground surface.

4.2 Geologic/Hydrogeologic Conditions

As shown on Figure A-1, review of lithologic logs for Trench 38TP101 indicate the area is capped by a 3 inch layer of asphaltic concrete (AC) resting on a 1.75-0.75 foot thick, red chert gravel baserock (BR) lift with mixed Franciscan (1 inch minus) gravels in the 1.0 to 2.0 bgs lift. From 2.0 to 7.0 feet bgs, a sandy lean clay was observed beneath the gravel baserock. The sandy lean clay appears to be Colma derived fill material. Numerous utility structures were observed in this interval.

From 8.0 to 16.0 linear feet from the north end of the excavation and between 2.5 and 5.0 feet bgs, a dark grey sandy clay/clayey sand of bay origin and exhibiting disturbed textural variations was observed.

From 7.0 to 8.0 feet bgs a medium dense clayey sand was identified. The clayey sand was saturated and interpreted as fill.

From 8.0 to 9.5 feet bgs, a grey fat clay is observed that is consistent with Bay Mud. The clay is soft and wet with approximately 10% organic materials and is insitu native material. Between the 7.0-8.0 foot bgs clayey sand, and the underlying fat clay, a thin continuous peat layer was observed. Underlying the fat clay from 9.5 to 14.0 feet bgs was a poorly graded sand. The sand was medium dense, saturated and exhibited clayey sand. Consistent layers of Bay Mud were not encountered at these depths in the trench, and soils were generally saturated with groundwater.

4.3 Observations/Soil Sampling of Potential Contamination

No significant odors, PID readings, or visual signs of potential contamination were observed, measured, or identified during excavation and survey of the Trench 38TP101 Area; therefore, no soil samples were collected.

5.0 TRENCH 207TP100 AREA

The location of this trench is shown on Plate 1; the trench log is presented in Attachment A, Figure A-2. Soil sampling results from this trench and cleanup levels are summarized in Table 1.

5.1 Trench Description

Trench 207TP100 extended 46-feet in an east-west direction, sub-parallel to Mason Street. It was located 18-feet south of Mason Street and ended 76-feet east of Halleck Street. The depth of the excavation ranged from 5.0-10.5 feet below ground surface.

5.2 Geologic/Hydrogeologic Conditions

As shown on Figure A-2, review of lithologic logs for Trench 207TP100 indicate the area is underlain by poorly graded fine to medium sand to 0-1.75 feet bgs. At the east end of the excavation, between 1.75 and 3.0 feet bgs several thin lifts of fill material were observed. A 4-inch lift of red chert gravel overlies an 8 inch sandy clay lift of Colma derived fill. Another 4 inch lift of asphaltic concrete (AC) derived gravel underlies the chert and clay lifts and rests on a poorly graded medium sand with approximately 5% shell debris. The poorly graded medium sand with approximately 5% shell debris graded gravel from approximately 3-5 feet bgs. From 5-9.5 feet bgs a poorly graded loose sand with abundant wood fragments was encountered.

At approximately 11-12 feet from the east end of the trench (approximately 111-110 feet east of Halleck Street), the previously identified fill materials from 1.75 to 7.0 feet bgs, grade into a clayey sand that is medium dense, wet and contains minor amounts of brick and porcelain. The top 0-1.75 feet bgs poorly graded fine to medium sand is continuous and overlies the clayey sand to the end of the trench. At approximately 8 feet from the western end of the trench, the clayey sand shallows to a 1.25 foot thick lift.

Tidal fluctuation was observed in the groundwater ranging between 5.0 and 6.0 feet bgs. Soil sample 207TP100(5.0) was collected at this 5.0 foot bgs interval. A second sample, 207TP100(9.5) was collected beneath the poorly graded, loose sand with abundant wood fragments layer and at the top of the poorly graded, medium dense, fine to medium sand bed.

At approximately 16 feet from the western end of the excavation, potential Low Temperature Thermal Desorption (LTTD) treated soils were observed below 1.75 feet bgs, underlain by a geotextile fabric and 3/4 inch drain at approximately 5.0-5.5 feet bgs. In accordance with the *Low Temperature Thermal Desorption-Treated Soil Tracking and Management Plan* (Plan; *EKI, 2004*) and requirements of RWQCB Order R2-2003-0080 (Order), the Trust was notified of the presence of the materials (soils, geotextile fabric and gravel) that indicated LTTD soils were present. As indicated on the trench log in Figure A-2 that shows the vertical excavation in this area only extended approximately 1-foot into the ¾-inch drain rock, upon identification of the LTTD backfill area, excavation in this portion of the trench was discontinued. The gravel and LTTD soils were placed back into the excavation in accordance with the Plan, and the overlying 1.75 feet of sands were replaced as top soil. The trench location was logged using GPS for tracking purposes in accordance with the Plan. Based on field observations, the soils encountered below approximately 1.75 feet bgs did not appear to match the description of standard LTTD soils (dark grey granular material with low organic content). However, two soil samples were collected from within the trench (as shown on Plate 1 and Figure A-2, and presented in Table 1) to further characterize the soil within the Saltwater and Freshwater Ecological Protection Zone in accordance with the Plan. No petroleum-related COC cleanup levels were exceeded in the samples.

5.3 Observations/Soil Sampling of Potential Contamination

Detectable signs of soil contamination were observed in this trench; therefore, soil samples were collected for analysis. Data from these soil samples were incorporated into the Draft Final CAP and implementation of corrective action alternative (excavation) in this area described in the Draft and Draft Final CAP (*MACTEC, 2005*).

This section discusses chemical analytical results for soil samples 207TP100(5.0) and 207TP100(9.5), collected from depths of 5.0 and 9.5 feet bgs, respectively from within Trench 207TP100.

Analytical results for detected chemicals in soil and applicable cleanup levels are presented in Table 1, and were evaluated with respect to applicable cleanup levels from Table 3 of the Draft CAP (*MACTEC, 2005*) or Table 7-2 of the *Presidio-Wide Cleanup Level Document (EKI, 2002; Table 7-6 Revised May 2006)* if the analyte was not identified in the Draft CAP as a chemical of concern (COC). Analytical results for COCs detected in soil samples collected from Trench 207TP100 are posted on Plate 1.

The following provides a discussion of the results for analyses performed on the soil samples collected. The Laboratory Analytical Data Report for all samples is presented in Attachment B, and the Data Validation Report is presented in Attachment C.

Purgeable Hydrocarbons

TPHg was detected in the 5.0 ft bgs soil sample collected at the Trench 207TP100 Area at a concentration of 21 mg/kg, which is below the cleanup level of 610 mg/kg.

Extractable Hydrocarbons

TPHd and TPHmo were detected in both soil samples collected at the Trench 207TP100 Area at concentrations ranging from 39 to 150 mg/kg for TPHd; and 78 to 390 mg/kg for TPHmo; which are below the cleanup levels of 700 and 980 mg/kg, respectively.

BTEX

Benzene, toluene, ethylbenzene and xylene were not detected in soil samples collected at the Trench 207TP100 Area.

SVOCs

PAHs were detected in both samples collected at the Trench 207TP100 Area, but of the PAHs detected, none were detected at concentrations above the cleanup levels except benzo(a)pyrene, which was detected at concentrations of 0.045 and 0.038 mg/kg, above the cleanup level of 0.027 mg/kg.

PCBs

PCBs were not detected in soil samples collected at the Trench 207TP100 Area.

Pesticides

Organochlorine pesticides were not detected in soil samples collected at the Trench 207TP100 Area. However, it should be noted that the laboratory detection limits exceeded the cleanup levels for several analytes.

Metals

Zinc was detected in both soil samples collected at the Trench 207TP100 Area, but only the sample collected from a depth of 5.0 feet bgs at a concentration of 78 mg/kg exceeded the cleanup level of 60 mg/kg.

6.0 TRENCH 207TP101 AREA

The location of this trench is shown on Plate 1; the trench log is presented in Attachment A, Figure A-2.

6.1 Trench Description

Trench 207TP101 extended 33-feet in a northwest-southeast direction, 107 feet east and sub-parallel to Halleck Street. It was located 19-feet southeast of the Northern Doyle Drive – Highway 101 Overpass and ended 52-feet southeast of Northern Doyle Drive. The average depth of the excavation ranged from 5.0-13.0 feet below ground surface.

6.2 Geologic/Hydrogeologic Conditions

As shown in Figure A-2, review of lithologic logs for Trench 207TP101 indicates the area is capped by a 3 inch layer of asphaltic concrete (AC) resting on a 1 foot thick bed of compacted well graded gravel baserock. A 6-inch layer of red chert underlies the baserock layer. At 2 to 3 feet bgs, a heterogeneous layer of poorly graded sand/silty sand with inclusions and layers of gravel and clay was observed. This material contained brick and wood materials and gradually tapered out between 9.0 and 17 feet from the north end of the excavation.

From 4.0 to 6.0 feet bgs, a gravelly fill is identified. Heterogeneous, it is primarily a well-graded gravel with 30-40% sand and fines, and includes some brick and refuse materials. This layer is moist to wet. The layer is discontinuous, is intersected by the poorly graded sand/silty sand described above, and appears to pinch out 10-15 feet from the north end of the excavation. The gravelly fill replaces the sand/silty sand between 3-5 feet bgs from 9-17 from the north end of the excavation and remains continuous through the remaining length of the excavation. At 21-33 feet from the north end of the excavation and between 3-4 feet bgs a lens of Colma Fill with brick and concrete is layered into the gravelly fill.

From approximately 5.5-9.0 feet bgs a medium dense layer of clayey sand with clam shells underlies the gravelly fill. This material appears to be reworked native soils. From 9.0-12.0 feet bgs, dark grey fat clay is encountered and identified as native Bay Mud. The Bay Mud overlies poorly graded sand, loose, wet insitu bay deposits, and is up to 3 feet thick at this location.

At approximately 6.5 feet from the northern end of the excavation at a depth of approximately 5.5 feet bgs, an abandoned 4-inch diameter terra cotta pipeline was intersected. At approximately 6.0 feet from the northern end of the excavation at a depth of approximately 6.0 feet bgs, an abandoned 6 inch diameter terra cotta pipeline running subparallel (offset 20° to the east) to the trench, was intersected.

6.3 Observations/Soil Sampling of Potential Contamination

No significant odors, PID readings, or visual signs of potential contamination were observed, measured, or identified during excavation and survey of the Trench 207TP101 Area; therefore, no soil samples were collected.

7.0 TRENCH 230TP100 AREA

The location of this trench is shown on Plate 2; the trench log is presented in Attachment A, Figure A-3. Soil sampling results from this trench are discussed in Section 7.4, and analytical data are summarized in Table 2.

7.1 Trench Description

Trench 230TP100 extended 50 feet in a southwest to northeast direction, sub parallel to the southeastern side of Building 230. The trench was located 35-feet from the eastern corner of the building and stepped-out 14-feet from the southeastern side of the building. The average depth of the excavation ranged from 4.0-13.0 feet below ground surface.

7.2 Geologic/Hydrogeologic Conditions

As shown on Figure A-3, review of lithologic logs for Trench 230TP100 indicate the area is capped by a 3 inch layer of asphaltic concrete (AC) resting on approximately 6 inches of red chert gravel, overlying a 1 foot thick layer of 1.5 inch diameter sandstone gravel (possibly railroad ballast), another 6 inch lift of red chert is beneath the sandstone gravel layer. The top of the sandstone layer appears to have a lightly oiled surface. At 2 to 3.5 feet bgs, sandy lean clay was observed beneath the base rock. From 3.5 to 5.0 feet bgs is a silty sand composed of Colma-derived fill. The Colma-derived fill ranges from moist at the top to wet at the bottom and one sample, 230TP(4.0) and one duplicate sample, DUP012706 were collected in this interval from 4.0 feet bgs.

Underlying the Colma-derived fill at 5.0 to 6.5 feet bgs is a clayey fine-grained sand. This interval appears to be fill or disturbed native materials.

From 6.5 to 7.0 feet bgs, a wet, loose, poorly graded sand was observed underlying the clayey fine-grained sand. There are no shell materials present and represents the top of the undisturbed native materials. At approximately 7.5 feet bgs, a discontinuous dark-grey fat clay is interbedded with the clayey fine-grained sand. The interbedding is observed down to 11.0 feet bgs and only the clayey fine-grained sand bed is visible from 11.0 to 13.0 feet bgs. Bay Mud is present as thin, discontinuous layers.

At approximately 2.0 to 3.0 feet from the southern end of the excavation at a depth of approximately 3.0 feet bgs, a north trending, intact terra cotta pipeline was unearthed. At approximately 21.0 feet from the southern end of the excavation at a depth of approximately 4.0 feet bgs, a broken, 5 inch diameter, terra cotta pipeline was intersected. At approximately 29.0 feet from the southern end of the excavation at a depth of approximately 4.0 feet bgs, a broken, 6.0-inch diameter, terra cotta pipeline was intersected. The broken terra cotta lines were observed by the Trust utility department personnel and were plugged with concrete and abandoned at the Trust's request.

7.3 Observations/Soil Sampling of Potential Contamination

Dewatering of surface water runoff that entered the shallow (approximately 3 to 5 ft deep) trench excavation during a significant rain event was performed in order to (1) access a 6-inch diameter broken terra cotta pipe that was plugged with concrete and abandoned under approval by the Trust utility department, and (2) facilitate backfilling activities. No significant odors, PID readings, or visual signs of potential contamination were observed, measured, or identified in the trench or water that collected in the trench. The Trust's excavation contractor (ERRG) pumped approximately 50 to 100 gallons of water from the excavations into a 500-gallon water tote; the water was not sampled prior to being transported to the Building 649 firing range site at the Presidio where ERRG was conducting remedial activities and had

a 1500-gallon HDPE holding tank at the site with additional capacity. Therefore, as a cost saving measure, the water was not disposed under the Trust's sewer discharge permit in accordance with protocols identified in the work plan. The water from the holding tank was sampled by ERRG and analyzed for lead (the chemical of concern at the Building 649 site) prior to ERRG transferring the water collected from 230TP100 to the holding tank (that contained water collected onsite during remedial activities at the Building 649 site) and off-site disposal. Analytical results and manifests associated with management and offsite disposal of the water have been included in Attachment E. In addition, an Amendment letter (*Trust, 2006*) sent to DTSC regarding the *Sand Pit Fill Abatement, Building 649 Small Arms Firing Range, Presidio of San Francisco, California* (Abatement Report) provided clarification regarding the origin, testing, and disposal of waste water reported in the Abatement Report (*T&R, 2006*).

Significant signs of soil contamination were not observed in this trench. However, soil samples were collected for analysis to provide additional characterization data of this area for consideration during implementation of recommended correction actions (excavation) in this area described in the Draft CAP (*MACTEC, 2005*). .Data from these soil samples were incorporated into the Draft Final CAP and implementation of corrective action alternative (excavation) in this area described in the Draft and Draft Final CAP (*MACTEC, 2005*).

This section discusses chemical analytical results for soil samples 230TP100(4.0) and DUP012706(4.0), collected from a depth of 4.0 feet bgs within Trench 230TP100.

Analytical results for detected chemicals in soil and applicable cleanup levels are presented in Table 2, and were evaluated with respect to applicable cleanup levels from Table 3 of the Draft CAP (*MACTEC, 2005*) or Table 7-2 of the *Presidio-Wide Cleanup Level Document (EKI, 2002; Table 7-6 Revised May 2006)* if the analyte was not identified in the Draft CAP as a chemical of concern (COC). Analytical results for COCs detected in soil samples collected from Trench 230TP100 are posted on Plate 2.

The following provides a discussion of the results for analyses performed on the soil samples collected. The Laboratory Analytical Data Report for all samples is presented in Attachment B, and the Data Validation Report is presented in Attachment C.

Purgeable Hydrocarbons

TPHg was not detected in the soil sample or duplicate sample collected from within the Trench 230TP100 Area.

Extractable Hydrocarbons

TPHd and TPHmo were not detected in the soil sample or duplicate sample collected from within the Trench 230TP100 Area.

BTEX

Benzene, toluene, ethylbenzene and xylene were not detected in the soil sample or duplicate sample collected from within the Trench 230TP100 Area.

SVOCs

PAHs were not detected in the soil sample or duplicate sample collected from within the Trench 230TP100 Area.

PCBs

PCBs were not detected in the soil sample or duplicate sample collected from within the Trench 230TP100 Area.

Pesticides

Organochlorine pesticides were not detected in the soil sample or duplicate sample collected from within the Trench 230TP100 Area.

Metals

No metals exceeding the cleanup levels were detected in the soil sample or duplicate sample collected from within the Trench 230TP100 Area.

8.0 TRENCH 231TP100 AREA

The location of this trench is shown on Plate 2; the trench log is presented in Attachment A, Figure A-4.

8.1 Trench Description

Trench 231TP100 extended 36-feet in a northeast to southwest direction, sub-parallel to Southern Doyle Drive/Highway 101 Overpass. The eastern end of the excavation was located 17-feet west of northern corner of Building 230. The average depth of the excavation ranged from 4.0-14.0 feet below ground surface.

8.2 Geologic/Hydrogeologic Conditions

As shown on Figure A-4, review of lithologic logs for Trench 231TP100 indicate the area is capped by a 3 inch layer of asphaltic concrete (AC) resting on approximately 1.75 feet of well graded, red chert gravel. At 2 to 4.0 feet bgs, a lean clay with sand was observed beneath the red chert gravel. From 1.0 to 5.0 linear feet from the east end of the trench the lean clay with sand layer is as shallow as 1.0 foot bgs and includes gravel, wood, bricks, nails and wire in the matrix. At 4.0 to 6.0 feet bgs is a clayey sand composed of Colma-derived fill. Between 25.0 to 32.0 linear feet from the eastern end of the excavation, blocks of Colma-derived fill extend upward into the lean clay with sand layer as shallow as 3.25 feet bgs. The base of the Colma-derived fill marks the top of the native soils. Groundwater was observed flowing into the excavation along the fill/native contact at a rate of approximately 5 to 10 gallons per minute (gpm).

At the top of the native materials, the surface of the fat clay, from 6.0 to 7.0 feet bgs, is marked by organic rich lenses and rootlets. At approximately 9.0 feet bgs, the fat clay is interbedded with the discontinuous lenses of poorly graded sand. The sand lenses increase in thickness and areal continuity with increasing depth. At approximately 11.0 feet bgs, a layer of 1.5-2 inch long clam shells is observed. From 12.5 to 14.0 feet bgs, a homogeneous bed of poorly graded, fine to medium sand is present and contains no shell materials.

8.3 Observations/Soil Sampling of Potential Contamination

No significant odors, PID readings, or visual signs of potential contamination were observed, measured, or identified during excavation and survey of the Trench 231TP100 Area; therefore, no soil samples were collected.

9.0 TRENCH 231TP101 AREA

The location of this trench is shown on Plate 2; the trench log is presented in Attachment A, Figure A-4.

9.1 Trench Description

Trench 231TP101 extended 44-feet in a southeast to northwest direction, perpendicular to west side of Building 230. The trench was located approximately 67 feet south of the northern corner of Building 230 and stepped-out approximately 9-feet from the building's northwestern wall. The depth of the excavation ranged from 9.5-14.0 feet below ground surface. At the south end, the trench was opened to a depth of 12.5 feet bgs. At the north end, the trench was opened to a depth 9.5 feet bgs and at 35.0 linear feet from the south end of the excavation the trench was opened to a depth of 14.0 feet bgs.

9.2 Geologic/Hydrogeologic Conditions

As shown on Figure A-4, review of lithologic logs for Trench 231TP101 indicate the area is capped by a 3 inch layer of asphaltic concrete (AC) resting on a 1.5-1.75 foot thick, red chert gravel baserock (BR). At 2 to 4.0 feet bgs, a sandy lean clay was observed beneath the red chert. Both the baserock and the sandy lean clay contained boulder size fragments of asphalt, and traces of brick and metal. Between 3.5 and 4.0 feet bgs, a thin, discontinuous, sandy lean clay layer is present. The layer is compacted with a white deposit, possible calcium carbonate ($CaCO_3$) on the top surface. The layer grades into the underlying fill. From approximately 3.5 to 5.5 feet bgs exhibiting a gradational contact with the underlying lift was a dark olive grey fat clay that resembled disturbed native soil. Underlying the fat clay layer from approximately 5.5 to 7.5 feet bgs was loose poorly graded sand that was saturated with water flowing at the base. Wood debris and nails indicated this to be fill material.

At 7.5 feet bgs, the surface of the fat clay, which extends from 7.5 to 9.5 feet bgs, is marked by organic rich material and rootlets indicating native materials. From approximately 9.5 to 10.5 feet bgs, a poorly graded sand underlies the fat clay. The sand is medium dense and saturated with free flowing water at 10.5 feet bgs. From 10.5 to 11.5 feet bgs a one foot thick fat clay layer is observed, with similar characteristics to the 7.5 to 9.5 clay interval. A poorly graded sand from 11.5 to 13.0 feet bgs, underlies the clay and from 13.0 to 14.0 the poorly graded sand is underlain by a fat clay bed.

9.3 Observations/Soil Sampling of Potential Contamination

No significant odors, PID readings, or visual signs of potential contamination were observed, measured, or identified during excavation and survey of the Trench 231TP101 Area; therefore, no soil samples were collected.

10.0 TRENCH 231TP102 AREA

The location of this trench is shown on Plate 2; the trench log is presented in Attachment A, Figure A-5.

10.1 Trench Description

Trench 231TP102 extended 55-feet in a north-northwest to south-southeast direction, approximately 34 feet due west of the western corner of Building 230. The depth of the excavation ranged from 4.0-14.0 feet bgs. At 31.0 linear feet from the north end of the excavation the trench was opened to a depth of 14.0 feet bgs at its midpoint.

10.2 Geologic/Hydrogeologic Conditions

As shown on Figure A-5, review of lithologic logs for Trench 231TP102 indicate the area is capped by a 3 to 6 inch layer of asphaltic concrete (AC) resting on various lifts of gravel baserock (BR) and backfill sand. At the north end of the excavation grey baserock extends from the base of the AC to approximately one foot bgs. The grey base rock thins upward at 6.0 linear feet and is absent after 9.0 linear feet from the north end of the excavation. The grey baserock is underlain by red chert gravel from 1.0-2.5 feet bgs that also slopes upward and is absent at 16 linear feet from the north end of the excavation. At 17.5 linear feet from the north end of the excavation a thin (6 inch thick) lift of baserock is present through the south end of the excavation at 55 feet. From 12.0 to 30.0 linear feet from the north end of the excavation, a brown poorly graded backfill sand that coincides with Trust utility records for an abandoned sanitary sewer is encountered. The sand ranges in thickness from 3.5 feet at 13.0 to 14.5 linear feet from the north end of the excavation to 9 inches thick between 18.0 and 27.0 linear feet from the north end of the excavation and finally 6 inches thick between 27.0 and 42.0 linear feet from the north end of the excavation, beyond which it is absent.

The sand and gravel lifts are underlain by a sandy lean clay that extends down to 7.5 feet bgs, and contains occasional gravel and sparse debris including brick, wood, glass and metal. The soil is saturated at depth and groundwater is indicated at approximately 4.0 feet bgs. From 7.5 to 8.25 feet bgs an organic rich fat clay with leaves and roots is identified. At 8.25 to 9.5 another fat clay with roots and thin laminations of sand is observed. Underlying the fat clay from 9.5 to 12.0 feet bgs is a dark bluish grey, poorly graded, fine to medium sand that is loose and saturated. From 12.0 to 14.0 feet bgs a light yellowish brown poorly graded sand is present with thin iron oxide banding and soft iron oxide inclusions, which are less than 0.5 inch diameter.

10.3 Observations/Soil Sampling of Potential Contamination

No significant odors, PID readings, or visual signs of potential contamination were observed, measured, or identified during excavation and survey of the Trench 231TP102 Area; therefore, no soil samples were collected.

11.0 TRENCH 231TP103 AREA

The location of this trench is shown on Plate 2; the trench log is presented in Attachment A, Figure A-5.

11.1 Trench Description

Trench 231TP103 extended 28-feet in a south-southwestern to north-northeastern direction, north and perpendicular to the length of Building 231. It was located 44-feet east of the western end of Building 231 (73-feet east of Halleck Street) and stepped-off the northern side of the building by 10 feet. The depth of the excavation ranged from 11.0-13.0 feet bgs.

11.2 Geologic/Hydrogeologic Conditions

As shown on Figure A-5, review of lithologic logs for Trench 231TP103 indicate the area is capped by two 3-inch layers of asphaltic concrete (AC) and separated by 3 inches of baserock. Four additional layers of baserock underlie the lower AC surface and are comprised of a 3-inch olive brown baserock with an oiled surface, a 6-inch red chert gravel, a 6-inch grey Franciscan metasoil gravel and finally another 6-inch red chert lift for a total depth of 2.5 feet bgs. Water appears to move preferentially through the chert layers. From 2.5 to 7.5 feet bgs is a very dark grayish brown, soft, sandy lean clay that is moist to wet; with inclusions of grayish clayey sand and lean clay fill materials. No anthropogenic materials were observed. At the base (7.5 feet bgs) contact groundwater was entering the excavation.

From 7.5 to 10.0 feet bgs was a clayey sand that was firm and saturated and is consistent in color and texture with the top of the Colma Formation. The top of the bed show root development structures but no soil horizon. The bed appears disturbed as a result of possible slump or slope wash events. At 10.0 to 11.0 feet bgs the clayey sand is underlain by an organic clay with root structures growing through sandy laminations. From 11.0 to 13.0 feet bgs the clayey sand in underlain by loose saturated poorly graded fine to medium sand with trace organics. This sand appeared massive and exhibited no stratigraphy, possibly a dune sand formation.

11.3 Observations/Soil Sampling of Potential Contamination

No significant odors, PID readings, or visual signs of potential contamination were observed, measured, or identified during excavation and survey of the Trench 231TP103 Area; therefore, no soil samples were collected.

12.0 CONCLUSIONS

Environmental oversight activities conducted by MACTEC during the subsurface geoarchaeological survey indicate:

- In the 1 of the 9 trenches excavated (207TP100) observations of potentially contaminated soils were made, and soil samples were collected for analysis of COCs; only zinc and benzo(a)pyrene were detected slightly above their respective cleanup levels.

- No contaminated soils with significant odors, PID readings, or visual signs of contamination were encountered within the other 8 trenches excavated.

- In Trench 230TP100 where soil samples were collected for the purposes of providing additional characterization data, no COCs were detected above cleanup levels.

- The geologic conditions within the trenches in general consist of varying strata of fill and native materials, including anthropogenic materials, sands, silts, and clays, with some discontinuous occurrences of organic materials.

- Soils in general were moist and/or saturated with groundwater in the top 4 feet of the trench, and saturated below 4 feet bgs by shallow groundwater.

- Bay Mud was generally not present at the depths excavated within the trenches, and appears to be thin or discontinuous in these areas.

13.0 REFERENCES

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TABLES

Table 1. Organic and Inorganic Compounds Detected in Soil -- Trench 207TP100
Environmental Field Report, Subsurface Geoarcheological Survey
Building 207/231 Area, Presidio of San Francisco, California

				Station Number:	207TP100		207TP100	
				Sample Date:	1/23/06		1/23/06	
				Sample Depth (feet):	5.0		9.5	
				Sample Number:	207TP100(5.0)		207TP100(9.5)	
				Lab Batch:	110039		110039	
Test Method/Analyte Name		Units	Cleanup Level [1]	Basis [2]	Value	Qualifier [4]	Value	Qualifier [4]
6010B								
	Antimony	mg/kg	5	eco	0.75	J-	0.39	J-
	Arsenic	mg/kg	6.2	eco	3.2		4.0	
	Barium	mg/kg	320	eco	43		63	
	Beryllium	mg/kg	10	eco	0.16		0.30	
	Cadmium	mg/kg	0.8	eco	0.28	J	0.18	J
	Chromium	mg/kg	140	eco	79		57	
	Cobalt	mg/kg	21	eco	8.5		8.5	
	Copper	mg/kg	49	eco	15		18	
	Lead	mg/kg	160	eco	47		15	
	Molybdenum	mg/kg	12	eco	0.43	J	1.6	
	Nickel	mg/kg	110	eco	48	J+	49	J+
	Selenium	mg/kg	0.5	eco	0.18	J	ND(0.31)	
	Silver	mg/kg	2	eco	0.81		ND(0.31)	
	Thallium	mg/kg	1	bkgrnd[5]	0.21	J	0.50	
	Vanadium	mg/kg	90	eco	43		45	
	Zinc	**mg/kg**	**60**	eco	**78**		45	
7471A								
	Mercury	mg/kg	0.4	eco	0.10		0.10	
8015 Modified								
	TPH Diesel (C12-C24) [3]	mg/kg	700	eco	150	H/Y/L	39	H/Y
	TPH Gasoline (C7-C12) [3]	mg/kg	610	eco	21	L/Y	ND(1.4)	
	TPH Motor Oil [3]	mg/kg	980	eco	390		78	

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				Station Number:	207TP100		207TP100	
				Sample Date:	1/23/06		1/23/06	
				Sample Depth (feet):	5.0		9.5	
				Sample Number:	207TP100(5.0)		207TP100(9.5)	
				Lab Batch:	110039		110039	
Test Method/Analyte Name		Units	Cleanup Level [1]	Basis [2]	Value	Qualifier [4]	Value	Qualifier [4]
8270SIM								
	Acenaphthene	µg/kg	30,000	eco	4.9	J	170	
	Acenaphthylene	µg/kg	30,000	eco	8.1	J	6.7	J
	Anthracene	µg/kg	30,000	eco	18	J	74	
	Benzo(a)anthracene	µg/kg	270	res	38	J	110	
	Benzo(a)pyrene	**µg/kg**	**27**	**res**	**45**	**J**	**38**	
	Benzo(b)fluoranthene	µg/kg	270	res	32	J	43	
	Benzo(g,h,i)perylene	µg/kg	30,000	eco	39	J	37	
	Benzo(k)fluoranthene	µg/kg	270	res	33	J	35	
	Chrysene	µg/kg	2,700	res	52	J	110	
	Dibenz (a,h) anthracene	µg/kg	30,000	eco	12	J	11	J
	Fluoranthene	µg/kg	30,000	res	50		760	
	Fluorene	µg/kg	30,000	res	4.6	J	220	
	Indeno(1,2,3-cd)pyrene	µg/kg	270	res	20	J	26	J
	Naphthalene	µg/kg	30,000	eco	19		17	J
	Phenanthrene	µg/kg	30,000	eco	33		1,200	
	Pyrene	µg/kg	30,000	eco	110	J	570	
8081								
	4,4'-DDD	µg/kg	49	eco	ND(21)		ND(21)	
	4,4'-DDE	µg/kg	98	eco	ND(21)		ND(21)	
	4,4'-DDT	µg/kg	8.2	eco	ND(21)		ND(21)	
	Aldrin	µg/kg	39	eco	ND(11)		ND(11)	
	alpha-BHC	µg/kg	62	eco	ND(11)		ND(11)	
	beta-BHC	µg/kg	62	eco	ND(11)		ND(11)	
	Chlordane	µg/kg	9	eco	(Sum of beta & gamma chlordane)			
	alpha-Chlordane	µg/kg	9 - (gamma-chlordane)		ND(11)		ND(11)	
	gamma-Chlordane	µg/kg	9 - (beta-chlordane)		ND(11)		ND(11)	
	delta-BHC	µg/kg	62	eco	ND(11)		ND(11)	
	Dieldrin	µg/kg	30	res	ND(21)		ND(21)	

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				Station Number:	207TP100		207TP100	
				Sample Date:	1/23/06		1/23/06	
				Sample Depth (feet):	5.0		9.5	
				Sample Number:	207TP100(5.0)		207TP100(9.5)	
				Lab Batch:	110039		110039	
Test Method/Analyte Name		Units	Cleanup Level [1]	Basis [2]	Value	Qualifier [4]	Value	Qualifier [4]
8081	Endosulfan I	µg/kg	1,100	eco	ND(11)		ND(11)	
(cont.)	Endosulfan II	µg/kg	1,100	eco	ND(21)		ND(21)	
	Endosulfan sulfate	µg/kg	1,100	eco	ND(21)		ND(21)	
	Endrin aldehyde	µg/kg	4	eco	ND(21)		ND(21)	
	Endrin ketone	µg/kg	4	eco	ND(21)		ND(21)	
	Endrin	µg/kg	4	eco	ND(21)		ND(21)	
	gamma-BHC	µg/kg	10	eco	ND(11)		ND(11)	
	Heptachlor epoxide	µg/kg	17	eco	ND(11)		ND(11)	
	Heptachlor	µg/kg	17	eco	ND(11)		ND(11)	
	Methoxychlor	µg/kg	440	eco	ND(110)		ND(110)	
	Toxaphene	µg/kg	NE		ND(380)		ND(380)	
8082								
	Aroclor 1016	µg/kg	33	eco	ND(15)		ND(15)	
	Aroclor 1221	µg/kg	33	eco	ND(30)		ND(30)	
	Aroclor 1232	µg/kg	33	eco	ND(15)		ND(15)	
	Aroclor 1242	µg/kg	33	eco	ND(15)		ND(15)	
	Aroclor 1248	µg/kg	33	eco	ND(15)		ND(15)	
	Aroclor 1254	µg/kg	33	eco	ND(15)		ND(15)	
	Aroclor 1260	µg/kg			ND(15)		ND(15)	
8260								
	1,1,1-Trichloroethane	µg/kg	8,000	res	ND(5.9)		ND(6.2)	
	1,1,2,2-Tetrachloroethane	µg/kg	NE		ND(5.9)		ND(6.2)	
	1,1,2-Trichloroethane	µg/kg	NE		ND(5.9)		ND(6.2)	
	1,1-Dichloroethane	µg/kg	NE		ND(5.9)		ND(6.2)	
	1,1-Dichloroethene	µg/kg	NE		ND(5.9)		ND(6.2)	
	1,2-Dichloroethane	µg/kg	NE		ND(5.9)		ND(6.2)	
	1,2-Dichloroethene (total)	µg/kg	NE		ND(5.9)		ND(6.2)	
	1,2-Dichloropropane	µg/kg	NE		ND(5.9)		ND(6.2)	
	1,3-Dichloropropene (cis)	µg/kg	NE		ND(5.9)		ND(6.2)	
	1,3-Dichloropropene (trans)	µg/kg	NE		ND(5.9)		ND(6.2)	

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					Station Number:	207TP100		207TP100	
					Sample Date:	1/23/06		1/23/06	
					Sample Depth (feet):	5.0		9.5	
					Sample Number:	207TP100(5.0)		207TP100(9.5)	
					Lab Batch:	110039		110039	
Test Method/Analyte Name		Units	Cleanup Level [1]	Basis [2]		Value	Qualifier [4]	Value	Qualifier [4]
8260 (cont.)	2-Butanone	µg/kg	3,800	res		ND(12)	UJ	10	J-
	2-Hexanone	µg/kg	NE			ND(12)		ND(12)	
	4-Methyl-2-pentanone	µg/kg	NE			ND(12)		ND(12)	
	Acetone	µg/kg	240	res		3.7	J-	38	
	Benzene [3]	µg/kg	600	res		ND(5.9)		ND(6.2)	
	Bromodichloromethane	µg/kg	NE			ND(5.9)		ND(6.2)	
	Bromoform	µg/kg	NE			ND(5.9)		ND(6.2)	
	Bromomethane	µg/kg	NE			ND(12)		ND(12)	
	Carbon disulfide	µg/kg	200,000	res		ND(5.9)		ND(6.2)	
	Carbon tetrachloride	µg/kg	NE			ND(5.9)		ND(6.2)	
	Chlorobenzene	µg/kg	NE			ND(5.9)		ND(6.2)	
	Chloroethane	µg/kg	NE			ND(12)		ND(6.2)	
	Chloroform	µg/kg	NE			ND(5.9)		ND(6.2)	
	Chloromethane	µg/kg	NE			ND(12)		ND(12)	
	Dibromochloromethane	µg/kg	NE			ND(5.9)		ND(6.2)	
	Ethylbenzene [3]	µg/kg	125,000	eco		ND(5.9)		ND(6.2)	
	Methylene chloride	µg/kg	76	res		41		47	
	Methyl-tert-butyl ether	µg/kg	NE			12		7.7	
	Styrene	µg/kg	NE			ND(5.9)		ND(6.2)	
	Tetrachloroethene	µg/kg	NE			ND(5.9)		ND(6.2)	
	Toluene [3]	µg/kg	270,000	eco		ND(5.9)		ND(6.2)	
	Trichloroethene	µg/kg	NE			ND(5.9)		ND(6.2)	
	Vinyl acetate	µg/kg	NE			ND(59)		ND(62)	
	Vinyl chloride	µg/kg	NE			ND(12)		ND(12)	
	Xylenes (total) [3]	µg/kg	55,000	eco		(Sum of m, o & p xylenes)			
	Xylenes (m & p)	µg/kg	55,000 - Xylenes (o)			ND(5.9)		ND(6.2)	
	Xylenes (o)	µg/kg	55,000 - Xylenes (m & p)			ND(5.9)		ND(6.2)	
D2216	Percent Moisture	%				21		21	

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Building 207/231 Area, Presidio of San Francisco, California

				Station Number:	207TP100		207TP100	
				Sample Date:	1/23/06		1/23/06	
				Sample Depth (feet):	5.0		9.5	
				Sample Number:	207TP100(5.0)		207TP100(9.5)	
				Lab Batch:	110039		110039	
Test Method/Analyte Name	Units	Cleanup Level [1]	Basis [2]	Value	Qualifier [4]	Value	Qualifier [4]	

FOOTNOTES:

[1] Cleanup Levels from Table 3 of Building 207/231 Corrective Action Plan (MACTEC, 2005) or Table 7-2 of the Presidio-Wide Cleanup Level Document (EKI, 2002a) if analyte not identified in Table 3, unless otherwise noted.

[2] Cleanup Levels from Table 3 of Building 207/231 Corrective Action Plan (MACTEC, 2005) or Table 7-5 of the Presidio-Wide Cleanup Level Document (EKI, 2002a) if analyte not identified in Table 3, unless otherwise noted.

[3] Cleanup Levels identified in Table 3 of the Building 207/231 Corrective Action Plan (MACTEC, 2005) based on protection of ecological special status species (eco) / background threshold value for Colma Formation (bkgrnd) / human health residential (res)

[4] Laboratory / Data Validation Qualifiers:

J	Estimated value
H	Heavier hydrocarbons contributed to the quantitation.
L	Lighter hydrocarbons contributed to the quantitation.
Y	Sample exhibits chromatographic pattern which does not resemble standard
J-	Analyte was positively identified; Sample result qualified as estimated with a low bias
J+	Analyte was positively identified; Sample result qualified as estimated with a high bias
J	Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

[5] Cleanup Levels identified in Table 7-2 of the Presidio wide clean up document (EKI, 2002) based on background levels and typical analyte

mg/kg	milligrams per kilogram
µg/kg	micrograms per kilogram
72	value shown in bold highlight exceeds cleanup level
ND(21)	detection limit shown in highlight exceeds cleanup level
NE	Not established
ND(2.2)	Not detected at reporting limit shown in parentheses

Table 2. Organic and Inorganic Compounds Detected in Soil -- Trench 230TP100
Environmental Field Report, Subsurface Geoarcheological Survey
Building 207/231 Area, Presidio of San Francisco, California

			Station Number:	230TP100		230TP100	
			Sample Date:	1/23/06		1/23/06	
			Sample Depth (feet):	4.0		4.0	
			Sample Number:	230TP100(4.0)		DUP(012706)	
			Lab Batch:	110039		110039	
Test Method/Analyte Name	Units	Cleanup Level [1]	Basis [2]	Value	Qualifier [4]	Value	Qualifier [4]
6010B							
Antimony	mg/kg	5	eco	0.22	J-	0.34	J-
Arsenic	mg/kg	6.2	eco	4.2		4.1	
Barium	mg/kg	320	eco	110		98	
Beryllium	mg/kg	10	eco	0.37		0.35	
Cadmium	mg/kg	0.8	eco	0.20	J	0.15	J
Chromium	mg/kg	140	eco	79		67	
Cobalt	mg/kg	21	eco	13		14	
Copper	mg/kg	49	eco	13		12	
Lead	mg/kg	160	eco	4.5		4.4	
Molybdenum	mg/kg	12	eco	0.47	J	0.43	J
Nickel	mg/kg	110	eco	49	J+	42	J+
Selenium	mg/kg	0.5	eco	0.22	J	ND(0.29)	
Silver	mg/kg	2	eco	ND(0.27)		ND(0.29)	
Thallium	mg/kg	1	bkgrnd[5]	ND(0.27)		0.24	J
Vanadium	mg/kg	90	eco	68		62	
Zinc	mg/kg	60	eco	35		31	
7471A							
Mercury	mg/kg	0.4	eco	0.019	J	0.052	
8015 Modified							
TPH Diesel (C12-C24) [3]	mg/kg	700	eco	ND(1.1)		ND(1.2)	
TPH Gasoline (C7-C12) [3]	mg/kg	610	eco	ND(1.1)		ND(1.3)	
TPH Motor Oil [3]	mg/kg	980	eco	ND(5.7)		ND(5.8)	

Table 2. Organic and Inorganic Compounds Detected in Soil -- Trench 230TP100
Environmental Field Report, Subsurface Geoarcheological Survey
Building 207/231 Area, Presidio of San Francisco, California

			Station Number:	230TP100		230TP100	
			Sample Date:	1/23/06		1/23/06	
			Sample Depth (feet):	4.0		4.0	
			Sample Number:	230TP100(4.0)		DUP(012706)	
			Lab Batch:	110039		110039	
Test Method/Analyte Name	Units	Cleanup Level [1]	Basis [2]	Value	Qualifier [4]	Value	Qualifier [4]
8270SIM							
Acenaphthene	µg/kg	30,000	eco	ND(5.8)		ND(5.8)	
Acenaphthylene	µg/kg	30,000	eco	ND(5.8)		ND(5.8)	
Anthracene	µg/kg	30,000	eco	ND(5.8)		ND(5.8)	
Benzo(a)anthracene	µg/kg	270	res	ND(5.8)		ND(5.8)	
Benzo(a)pyrene	µg/kg	27	res	ND(5.8)		ND(5.8)	
Benzo(b)fluoranthene	µg/kg	270	res	ND(5.8)		ND(5.8)	
Benzo(g,h,i)perylene	µg/kg	30,000	eco	ND(5.8)		ND(5.8)	
Benzo(k)fluoranthene	µg/kg	270	res	ND(5.8)		ND(5.8)	
Chrysene	µg/kg	2,700	res	ND(5.8)		ND(5.8)	
Dibenz (a,h) anthracene	µg/kg	30,000	eco	ND(5.8)		ND(5.8)	
Fluoranthene	µg/kg	30,000	res	ND(5.8)		ND(5.8)	
Fluorene	µg/kg	30,000	res	ND(5.8)		ND(5.8)	
Indeno(1,2,3-cd)pyrene	µg/kg	270	res	ND(5.8)		ND(5.8)	
Naphthalene	µg/kg	30,000	eco	ND(5.8)		ND(5.8)	
Phenanthrene	µg/kg	30,000	eco	ND(5.8)		ND(5.8)	
Pyrene	µg/kg	30,000	eco	ND(5.8)		ND(5.8)	
8081							
4,4'-DDD	µg/kg	49	eco	ND(3.8)		ND(3.8)	
4,4'-DDE	µg/kg	98	eco	ND(3.8)		ND(3.8)	
4,4'-DDT	µg/kg	8.2	eco	ND(3.8)		ND(3.8)	
Aldrin	µg/kg	39	eco	ND(1.9)		ND(2.0)	
alpha-BHC	µg/kg	62	eco	ND(1.9)		ND(2.0)	
beta-BHC	µg/kg	62	eco	ND(1.9)		ND(2.0)	
Chlordane	µg/kg	9	eco	(Sum of beta & gamma chlordane)			
alpha-Chlordane	µg/kg	9 - (gamma-chlordane)		ND(1.9)		ND(2.0)	
gamma-Chlordane	µg/kg	9 - (beta-chlordane)		ND(1.9)		ND(2.0)	
delta-BHC	µg/kg	62	eco	ND(1.9)		ND(2.0)	
Dieldrin	µg/kg	30	res	ND(3.8)		ND(3.8)	

Table 2. Organic and Inorganic Compounds Detected in Soil -- Trench 230TP100
Environmental Field Report, Subsurface Geoarcheological Survey
Building 207/231 Area, Presidio of San Francisco, California

				Station Number:	230TP100		230TP100	
				Sample Date:	1/23/06		1/23/06	
				Sample Depth (feet):	4.0		4.0	
				Sample Number:	230TP100(4.0)		DUP(012706)	
				Lab Batch:	110039		110039	
Test Method/Analyte Name		Units	Cleanup Level [1]	Basis [2]	Value	Qualifier [4]	Value	Qualifier [4]
	Endosulfan I	µg/kg	1,100	eco	ND(1.9)		ND(2.0)	
	Endosulfan II	µg/kg	1,100	eco	ND(3.8)		ND(3.8)	
	Endosulfan sulfate	µg/kg	1,100	eco	ND(3.8)		ND(3.8)	
	Endrin aldehyde	µg/kg	4	eco	ND(3.8)		ND(3.8)	
	Endrin ketone	µg/kg	4	eco	ND(3.8)		ND(3.8)	
	Endrin	µg/kg	4	eco	ND(3.8)		ND(3.8)	
	gamma-BHC	µg/kg	10	eco	ND(1.9)		ND(2.0)	
	Heptachlor epoxide	µg/kg	17	eco	ND(1.9)		ND(2.0)	
	Heptachlor	µg/kg	17	eco	ND(1.9)		ND(2.0)	
	Methoxychlor	µg/kg	440	eco	ND(19)		ND(20)	
	Toxaphene	µg/kg	NE		ND(68)		ND(69)	
8082								
	Aroclor 1016	µg/kg	33	eco	ND(14)		ND(14)	
	Aroclor 1221	µg/kg	33	eco	ND(28)		ND(28)	
	Aroclor 1232	µg/kg	33	eco	ND(14)		ND(14)	
	Aroclor 1242	µg/kg	33	eco	ND(14)		ND(14)	
	Aroclor 1248	µg/kg	33	eco	ND(14)		ND(14)	
	Aroclor 1254	µg/kg	33	eco	ND(14)		ND(14)	
	Aroclor 1260	µg/kg	33		ND(14)		ND(14)	
8260								
	1,1,1-Trichloroethane	µg/kg	8,000	res	ND(5.5)		ND(5.5)	
	1,1,2,2-Tetrachloroethane	µg/kg	NE		ND(5.5)		ND(5.5)	
	1,1,2-Trichloroethane	µg/kg	NE		ND(5.5)		ND(5.5)	
	1,1-Dichloroethane	µg/kg	NE		ND(5.5)		ND(5.5)	
	1,1-Dichloroethene	µg/kg	NE		ND(5.5)		ND(5.5)	
	1,2-Dichloroethane	µg/kg	NE		ND(5.5)		ND(5.5)	
	1,2-Dichloroethene (total)	µg/kg	NE		ND(5.5)		ND(5.5)	
	1,2-Dichloropropane	µg/kg	NE		ND(5.5)		ND(5.5)	
	1,3-Dichloropropene (cis)	µg/kg	NE		ND(5.5)		ND(5.5)	
	1,3-Dichloropropene (trans)	µg/kg	NE		ND(5.5)		ND(5.5)	

Table 2. Organic and Inorganic Compounds Detected in Soil -- Trench 230TP100
Environmental Field Report, Subsurface Geoarcheological Survey
Building 207/231 Area, Presidio of San Francisco, California

			Station Number:	230TP100		230TP100	
			Sample Date:	1/23/06		1/23/06	
			Sample Depth (feet):	4.0		4.0	
			Sample Number:	230TP100(4.0)		DUP(012706)	
			Lab Batch:	110039		110039	
Test Method/Analyte Name	Units	Cleanup Level [1]	Basis [2]	Value	Qualifier [4]	Value	Qualifier [4]
2-Butanone	µg/kg	3,800	res	ND(11)		ND(11)	
2-Hexanone	µg/kg	NE		ND(11)		ND(11)	
4-Methyl-2-pentanone	µg/kg	NE		ND(11)		ND(11)	
Acetone	µg/kg	240	res	ND(22)		ND(22)	
Benzene [3]	µg/kg	600	res	ND(5.5)		ND(5.5)	
Bromodichloromethane	µg/kg	NE		ND(5.5)		ND(5.5)	
Bromoform	µg/kg	NE		ND(5.5)		ND(5.5)	
Bromomethane	µg/kg	NE		ND(11)		ND(11)	
Carbon disulfide	µg/kg	200,000	res	ND(5.5)		ND(5.5)	
Carbon tetrachloride	µg/kg	NE		ND(5.5)		ND(5.5)	
Chlorobenzene	µg/kg	NE		ND(5.5)		ND(5.5)	
Chloroethane	µg/kg	NE		ND(11)		ND(11)	
Chloroform	µg/kg	NE		ND(5.5)		ND(5.5)	
Chloromethane	µg/kg	NE		ND(11)		ND(11)	
Dibromochloromethane	µg/kg	NE		ND(5.5)		ND(5.5)	
Ethylbenzene [3]	µg/kg	125,000	eco	ND(5.5)		ND(5.5)	
Methylene chloride	µg/kg	76	res	ND(47)	U	ND(47)	U
Methyl-tert-butyl ether	µg/kg	NE		ND(5.5)		ND(5.5)	
Styrene	µg/kg	NE		ND(5.5)		ND(5.5)	
Tetrachloroethene	µg/kg	NE		ND(5.5)		ND(5.5)	
Toluene [3]	µg/kg	270,000	eco	ND(5.5)		ND(5.5)	
Trichloroethene	µg/kg	NE		ND(5.5)		ND(5.5)	
Vinyl acetate	µg/kg	NE		ND(55)		ND(55)	
Vinyl chloride	µg/kg	NE		ND(11)		ND(11)	
Xylenes (total) [3]	µg/kg	55,000	eco	(Sum of m, o & p xylenes)			
Xylenes (m & p)	µg/kg	55,000 - [Xylenes (o)]		ND(5.5)		ND(5.5)	
Xylenes (o)	µg/kg	55,000 - [Xylenes (m & p)]		ND(5.5)		ND(5.5)	

Table 2. Organic and Inorganic Compounds Detected in Soil -- Trench 230TP100
Environmental Field Report, Subsurface Geoarcheological Survey
Building 207/231 Area, Presidio of San Francisco, California

			Station Number:	230TP100		230TP100	
			Sample Date:	1/23/06		1/23/06	
			Sample Depth (feet):	4.0		4.0	
			Sample Number:	230TP100(4.0)		DUP(012706)	
			Lab Batch:	110039		110039	
Test Method/Analyte Name	Units	Cleanup Level [1]	Basis [2]	Value	Qualifier [4]	Value	Qualifier [4]
D2216							
Percent Moisture	%			13		14	

FOOTNOTES:

[1] Cleanup Levels from Table 3 of Building 207/231 Corrective Action Plan (MACTEC, 2005) or Table 7-2 of the Presidio-Wide Cleanup Level Document (EKI, 2002a) if analyte not identified in Table 3, unless otherwise noted.

[2] Cleanup Levels from Table 3 of Building 207/231 Corrective Action Plan (MACTEC, 2005) or Table 7-5 of the Presidio-Wide Cleanup Level Document (EKI, 2002a) if analyte not identified in Table 3, unless otherwise noted.

[3] Cleanup Levels identified in Table 3 of the Building 207/231 Corrective Action Plan (MACTEC, 2005) based on protection of ecological special status species (eco) / background threshold value for Colma Formation (bkgrnd) / human health residential (res)

[4] Laboratory / Data Validation Qualifiers:

J	Estimated value
J-	Analyte was positively identified; Sample result qualified as estimated with a low bias
J+	Analyte was positively identified; Sample result qualified as estimated with a high bias
U	The analyte was detected in the associated method blank. The detected results in the associated project samples were changed to non-detect if those values were less than ten times the blank amount. Amount in parentheses is 10 times the amount detected in the method blank.

mg/kg	milligrams per kilogram
µg/kg	micrograms per kilogram
NE	Not established
ND(2.2)	Not detected at reporting limit shown in parentheses.

[5] Cleanup Levels identified in Table 7-2 of the Presidio wide clean up document (EKI, 2002) based on background levels and typical analyte detection limit.

Checked:_____

Approved:_____

PLATES

207TP100	5	9.50	Cleanup Level
Benzo(a)pyrene	0.045	0.038	0.027
Zinc	78	45	60

MASON STREET

VALLEJO STREET

NORTHERN DOYLE DRIVE

HWY 101 OVERPASS

MARSHALL

207TP100

38TP100

38TP101

207TP101

1996 EXCAVATION (LTTD SOIL)

FORMER BUILDINGS 38, 38-A GARAGE AREA REMEDIAL UNIT

FORMER BUILDING 207 AREA REMEDIAL UNIT (INLCUDING BUILDING 208 SUMP)

SUMP 208

207HP103 207HP100 207HP03 207HP18 207HP09

207SB06 207SB07 207SB104 207EX11 207SB08 207EX10 207SB09 207EX08 207EX12 207SB105 207SB01 207EX15 207EX14 207EX17 207EX13 207SB02 207EX19

207.1 207.2 207.3 F F F 206 207 202 203

38 38-A 38SB100 38SB101 38SB102 38SB103 GARAGE

AUTOMATIC CAR WASH EQUIP RM MANUAL MANUAL

231SB12 208SB100 231HP14 271SB100 271 231SB19 231HP32

0 20 40
SCALE IN FEET

EXPLANATION

- HYDROPUNCH
- SOIL BORING LOCATION
- EXCAVATION SAMPLE LOCATION
- SOIL BORING LOCATION WITH GRAB GROUNDWATER SAMPLE
- GEOARCHAEOLOGICAL TRENCH LOCATION
- 231 EXISTING STRUCTURE
- 202 FORMER STRUCTURE OR FEATURE
- BUILDING 207/231 AREA
- SALTWATER ECOLOGICAL PROTECTION ZONE (NORTH OF GREEN LINE)
- FRESHWATER ECOLOGICAL PROTECTION ZONE (SOUTH AND EAST OF BLUE LINE)
- APPROXIMATE DIRECTION OF SHALLOW ZONE GROUNDWATER FLOW MAY 24, 2004
- FORMER RAILROAD TRACKS

207TP100	5.0	Cleanup Level
Benzo(a)pyrene	0.045	0.027

STATION NAME
DEPTH OF SOIL SAMPLE IN FEET
CONCENTRATION (mg/kg)
ANALYTE DETECTED ABOVE CLEANUP LEVEL

NOTE: DETECTION LIMITS FOR VARIOUS PESTICIDES EXCEEDED CLEANUP LEVELS.

- GROUNDWATER REMEDIAL UNITS
- SOIL REMEDIAL UNITS

4089041001\GA\GA_FIG_10.DWG 10
4089041001\GA\GA_FIG_10.DWG

NO.	DATE	REVISIONS	BY	CHK

DRAWN: CN
ENGINEER: NAM
CHECKED:
DATE:

PROJECT NO: 4089041001 109
SCALE: AS SHOWN
APPROVED:
DATE: 04/06

MACTEC

Environmental Field Report for Subsurface Geoarchaeological Survey

Building 207/231 Area
Presidio of San Francisco, California

Trench and Soil Sampling Locations, Building 207 Area

PLATE: 1

SOUTHERN DOYLE DRIVE/HWY 101 OVERPASS

GORGAS AVENUE

EXISTING BUILDING 231 AREA REMEDIAL UNIT

EXISTING BUILDING 230 AREA REMEDIAL UNIT

EXISTING BUILDING 228 AREA REMEDIAL UNIT

HISTORIC WALL

231TP100

231TP101

231TP102

231TP103

230TP100

230TP100	4.0	Duplicate No. 012706	Cleanup Level
All Analytes	ND	ND	--

119 271 201 228 229 231 230

231.1 231.2 231.4 231.5 231.6 231.7

EXPLANATION

- MONITORING WELL - SHALLOW SAND
- MONITORING WELL - DECOMMISSIONED
- HYDROPUNCH
- GRAB GROUNDWATER SAMPLE
- SOIL BORING LOCATION
- PIEZOMETER - SHALLOW SAND
- EXCAVATION SAMPLE LOCATION
- SOIL BORING LOCATION WITH GRAB GROUNDWATER SAMPLE
- SVE AND GROUNDWATER INJECTION (IW) OR EXTRACTION (EW) WELL
- GEOARCHAEOLOGICAL TRENCH LOCATION
- BUILDING 207/231 AREA
- FORMER FUEL ISLAND
- FORMER UNDERGROUND STORAGE TANK (KNOWN UST's HAVE TANK NUMBERS)
- FRESHWATER ECOLOGICAL PROTECTION ZONE (SOUTH AND EAST OF BLUE LINE)
- HISTORIC WALL
- APPROXIMATE DIRECTION OF SHALLOW ZONE GROUNDWATER FLOW MAY 24, 2004
- FORMER RAILROAD TRACKS
- 231 EXISTING STRUCTURE
- 202 FORMER STRUCTURE OR FEATURE

230TP100	4.0	Duplicate No. 012706	Cleanup Level
All Analytes	ND	ND	--

STATION NAME
DEPTH OF SOIL SAMPLE IN FEET
CONCENTRATION (mg/kg)
ANALYTE

NOTE: NO CLEANUP LEVEL EXCEEDANCES.

- GROUNDWATER REMEDIAL UNITS
- SOIL REMEDIAL UNITS

N

0 20 40
SCALE IN FEET

4089041001SS45.DWG 1.0
2/09/2006 09:45:27

NO.	DATE	REVISIONS	BY	CHK

DRAWN: CS
ENGINEER: NAM
CHECKED:
DATE: 07/05

PROJECT NO: 4089041001 109
SCALE: AS SHOWN
APPROVED:
DATE: 04/06

MACTEC

Environmental Field Report for Subsurface Geoarchaeological Survey

Building 207/231 Area
Presidio of San Francisco, California

Trench and Soil Sampling Locations
Building 231 Area

PLATE: **2**

ATTACHMENT A

TRENCH LOGS

A-1: TRENCH 38TP100 & 38TP101

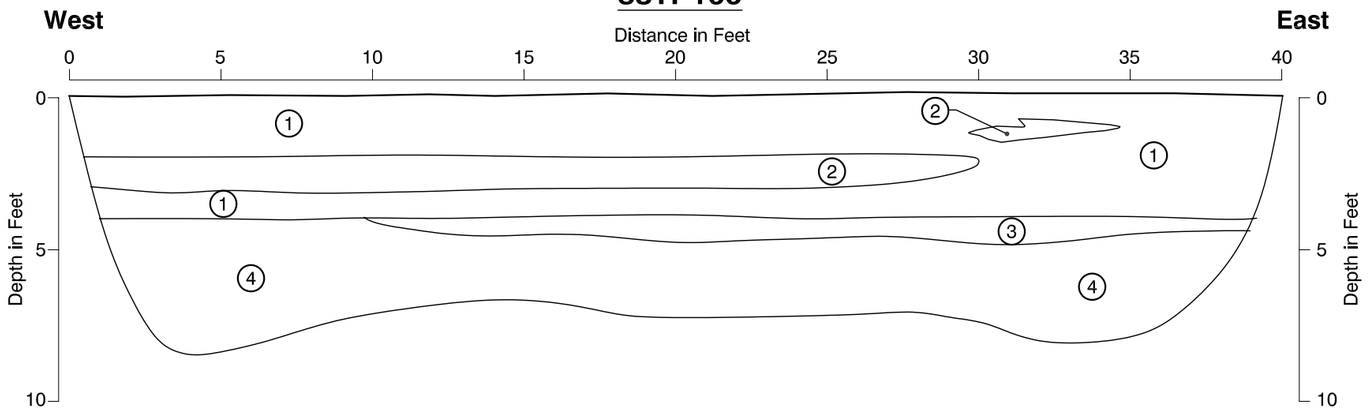
A-2: TRENCH 207TP100 & 207TP101

A-3: TRENCH 230TP100

A-4: TRENCH 231TP100 & 231TP101

A-5: TRENCH 231TP102 & 231TP103

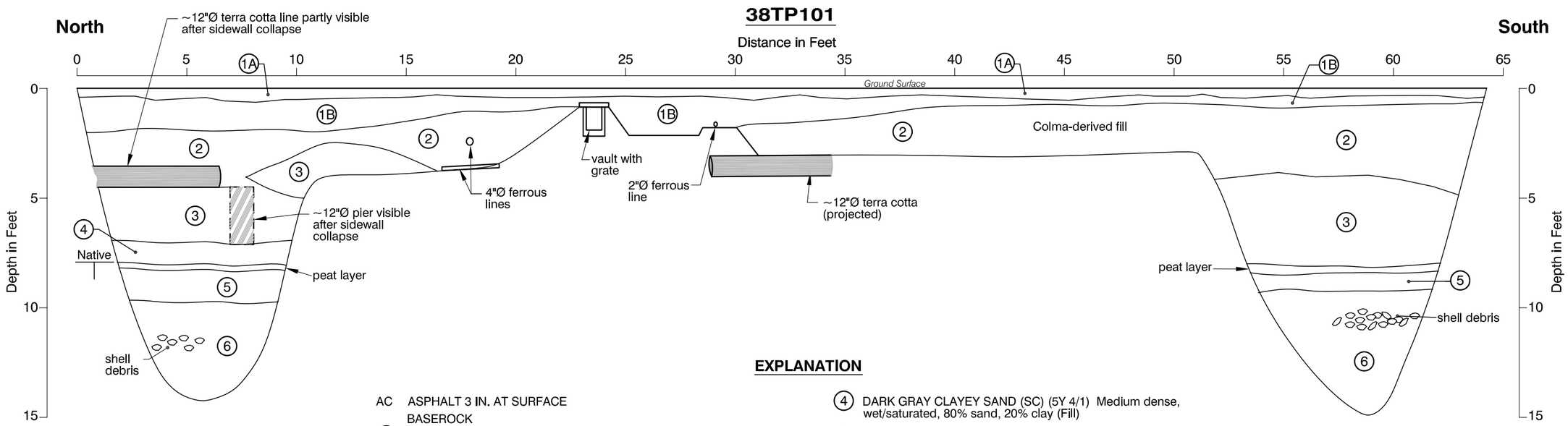
38TP100



EXPLANATION

1. LIGHT OLIVE-BROWN POORLY-GRADED SAND (SP) (2.5Y 5/3) Loose, moist, 95% sand (fine to medium), 5% silt, some terra cotta pipe fragments, shell hash (Fill)
2. OLIVE-BROWN POORLY-GRADED GRAVEL (GP) (2.5Y 4/3) Loose, wet, 90% gravel (3/4 - 1.5 in. dia), 10% sand (Fill)
3. BLACK SANDY SILT (ML) (2.5Y N2/0) Firm to hard, moist, 70% silt/clay, 30% very fine sand with root fibers and organic material in places. Has light gray fat clay on top surface. Fat clay is 1/2 - 2 in. thick. Silt lies evenly on sand below, doesn't look like a natural contact (compacted, re-worked Native/Fill)
4. DARK GRAY POORLY-GRADED SAND (SP) (5Y 4/1) Loose to medium dense, moist to wet, 95% fine to medium sand, 5% silt/files, massive, no bedding structures (Native)

38TP101



EXPLANATION

AC ASPHALT 3 IN. AT SURFACE

BASEROCK

1A RED CHERT TOP 1 ft. and

1B MIXED FRANCISCAN (1 in. MINUS) in second foot

2. DARK YELLOWISH BROWN SANDY LEAN CLAY (CL) (10YR 4/4) Medium firm, moist, 60% clay, 40% sand (Colma-derived fill), some color variation
3. DARK GRAY SANDY CLAY/CLAYEY SAND (CL/SC) Textural variations to fill, bay origin, disturbed
4. DARK GRAY CLAYEY SAND (SC) (5Y 4/1) Medium dense, wet/saturated, 80% sand, 20% clay (Fill)
5. GRAY FAT CLAY (CH) (5Y 5/1) Soft, wet, 90% clay, 10% organics (Native)
6. DARK GRAY POORLY-GRADED SAND (SP) (5Y 4/1) Medium dense, wet, 90% sand, 10% clay, some clayey sand layers and shell layers in unit; higher clay content at top of unit; no staining or signs of contamination (Native)

4089041001049.DWG 1.0
20060414.1254

PLATE

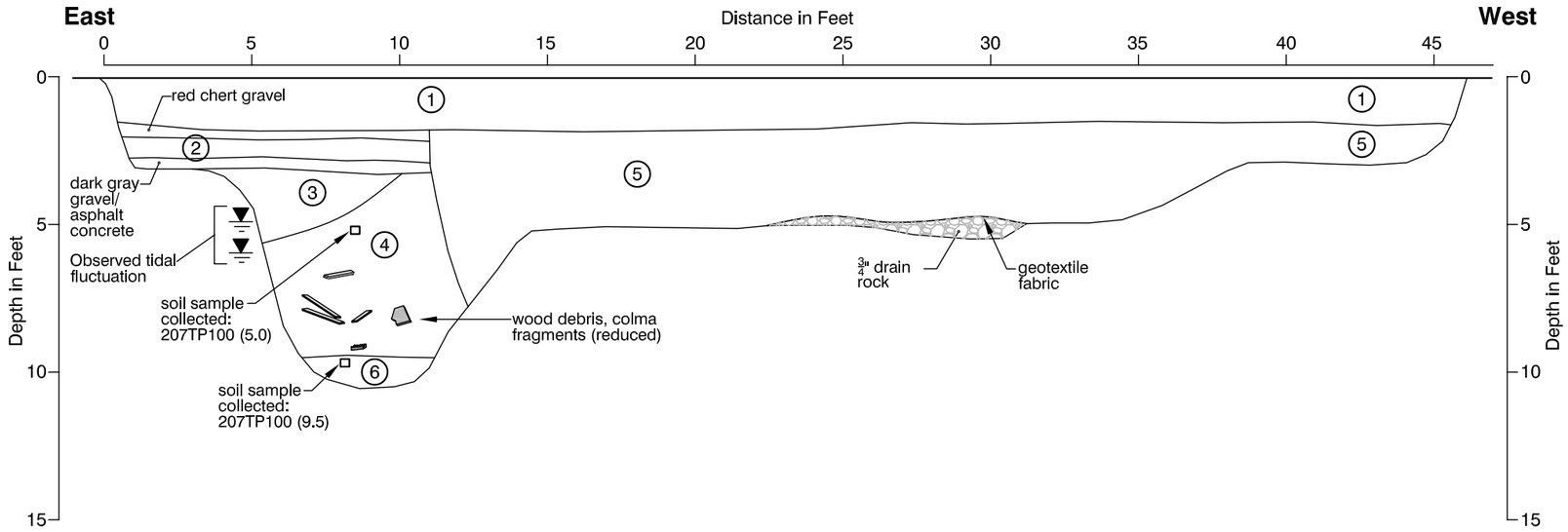
Logs of Test Pits 38TP100 and 38TP101

A-1

MACTEC

DRAWN	JOB NUMBER	CHECKED	CHCK'D DATE	APPROVED	APPRV'D DATE
CN	4089041001 109		03/06		

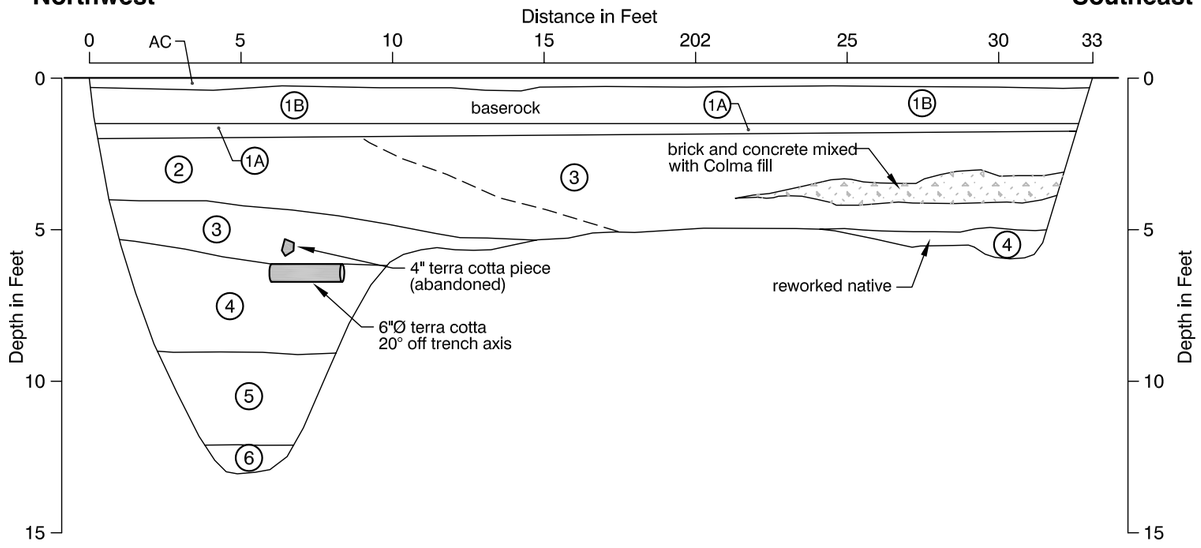
207TP100



EXPLANATION

1. OLIVE-BROWN POORLY-GRADED SAND (SP) (2.5Y 4/3) Loose, moist to wet, 90% fine to medium sand, 5% fines, 5% gravel inclusions, brick debris, asphalt
2. DARK YELLOWISH BROWN CLAY WITH SAND (CL) (10YR 4/4) Medium firm, moist, 75-85% clay/fines, 15-25% sand (Colma derived Fill)
3. DARK OLIVE-GRAY POORLY-GRADED SAND (SP) (5Y 3/4) Loose, moist, 95% medium sand, 5% shell hash, with inclusions of clay
4. DARK GRAY POORLY-GRADED SAND (SP) (5Y 4/1) Loose, wet to saturated, 90% sand, 10% clay/fines, with abundant wood debris, slight TPH odor (1 ppm) (Fill)
5. DARK BROWN CLAYEY SAND 9SC) (10YR 3/3) Loose to medium dense, wet, 85-90% sand, 10-15% clay/fines (excavation backfill) with minor amounts of brick, porcelain
6. DARK GRAY POORLY-GRADED SAND (SP) (5Y 4/1) Medium dense, saturated, 100% fine to medium sand

207TP101



EXPLANATION

AC ASPHALT 3 IN. AT SURFACE

BASEROCK

1A RED CHERT layer, no fines, wet

1B BROWN WELL-GRADED GRAVEL WITH SAND (GW) (10YR 4/3) Medium dense to dense, moist, 70% gravel, 25% sand, 5% fines (Baserock)

2. DARK YELLOWISH BROWN POORLY-GRADED SAND/SILTY SAND (textural variations) (SP/SM) (10YR 4/4) Loose, moist, 80-95% sand, 5-20% silt/fines, with inclusions/layers/fill events of gravel and clay, including brick and wood (Fill)
3. BROWN WELL-GRADED GRAVEL WITH SAND (textural variations throughout) (GW) (10YR 5/3) Loose to medium dense, moist to wet, generally 60% gravel, 30% sand, 10% fines, some brick, refuse (GravellyFill)
4. DARK GRAY CLAYEY SAND (SC) (5Y 4/1) Medium dense, moist to wet, generally 80% sand, 20% clay/fines. Some intact clam shells to ~2" length, heterogeneous texture (reworked Native)
5. DARK GRAY FAT CLAY (CH)(5Y 4/1) Soft, wet, 90% clay, 10% organics/sand (Bay Mud - Native)
6. DARK GRAY POORLY-GRADED SAND (SP)(5Y 4/1) Loose, wet, 90-95% sand, 5-10% clay/fines

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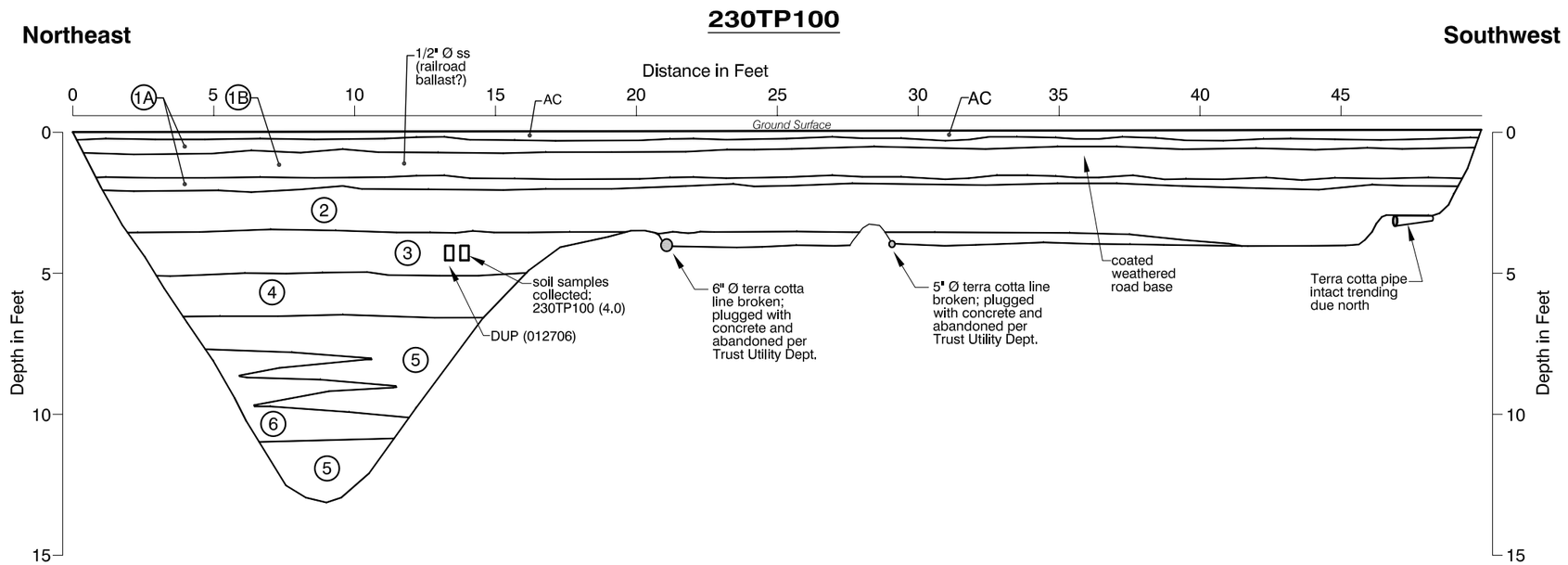
MACTEC

Logs of Test Pits 207TP100 and 207TP101

PLATE

A-2

DRAWN	JOB NUMBER	CHECKED	CHCK'D DATE	APPROVED	APPRV'D DATE
CN	4089041001 109		03/06		



EXPLANATION

AC ASPHALT AT SURFACE

BASEROCK (Fill))

(1A) RED CHERT GRAVEL

(1B) LIGHT BROWN SANDSTONE GRAVEL, 1-1/2" Ø (similar to railroad ballast)

(2) VERY DARK GRAYISH BROWN SANDY LEAN CLAY (CL) (10YR 3/2) Soft to firm (more compact at surface), moist to wet, 60-80% clay, 20-40% sand, generally sandier at base (Fill)

(3) OLIVE SILTY SAND (SM) (5Y 4/3) Medium dense, moist to wet, 60-80% fine sand, 20-40% silt (Colma-derived fill, appears to be highly reduced)

(4) DARK OLIVE-GRAY CLAYEY SAND (SC) (5Y 3/2) Loose, wet, 60% fine sand, 35% clay/fines, 5% gravel (Fill or disturbed Native)

(5) DARK GRAY POORLY-GRADED SAND (SP) (5Y 4/1) Loose to medium dense, wet, 90% sand, 10% silt/fines, no shell (Native)

(6) DARK GRAY FAT CLAY (CH) (5Y 4/1) Soft, wet, 90% clay, 10% organics, clay forms discontinuous layers within sand (Native)

4089041001049.DWG 1.0
20060421.1015

MACTEC

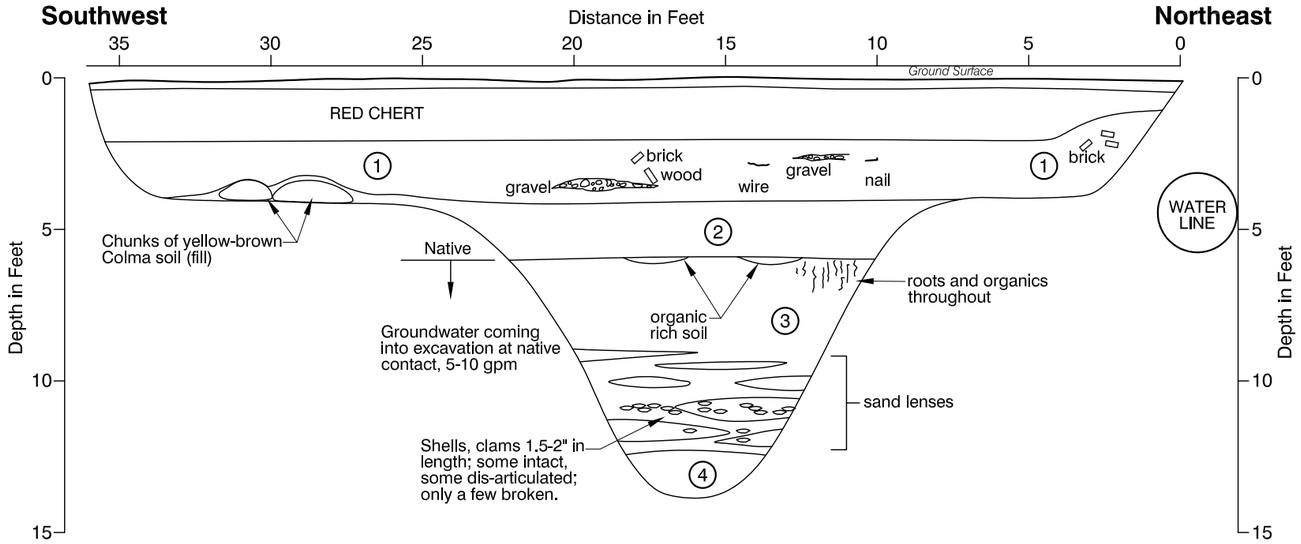
Log of Test Pit 230TP100

PLATE

A-3

DRAWN	JOB NUMBER	CHECKED	CHCK'D DATE	APPROVED	APPRV'D DATE
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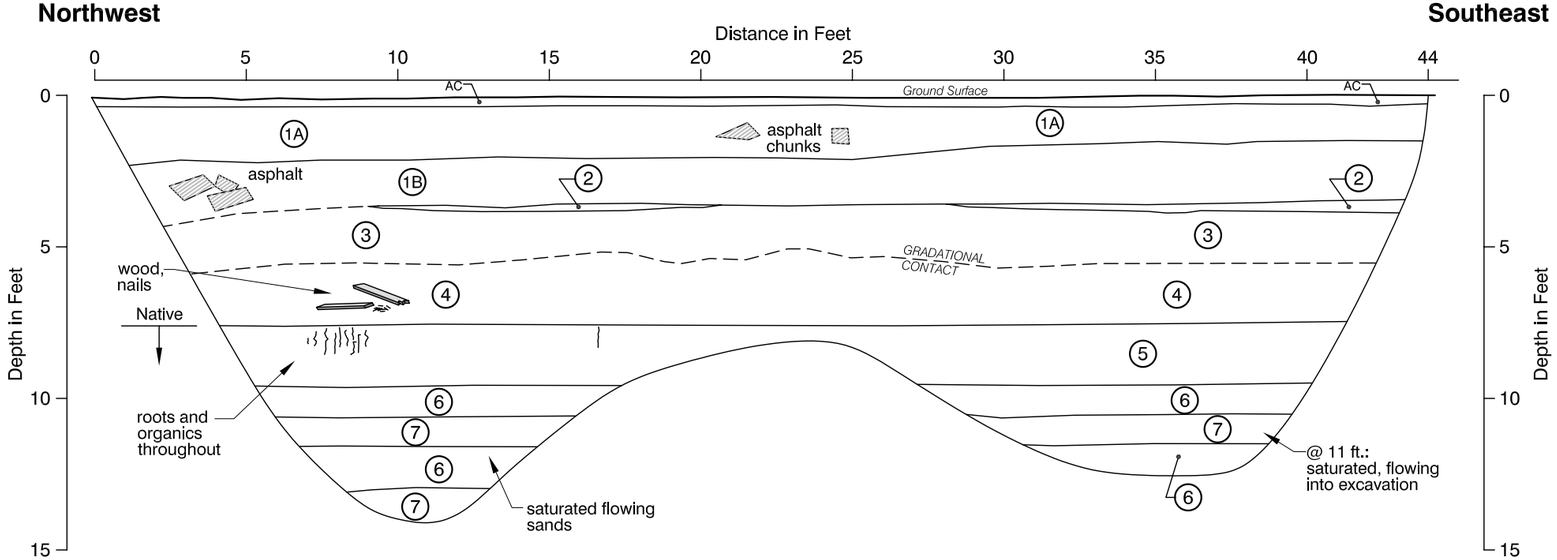
231TP100



EXPLANATION

1. VERY DARK GRAYISH BROWN LEAN CLAY WITH SAND (CL)(10 YR 3/2) Soft to firm (at top), 75% clay, 25% sand with trace debris
2. DARK OLIVE-GRAY CLAYEY SAND (SC)(5 YR 3/2) Medium dense to dense, 60-70% sand, 30-40% clay/fines (Colma-derived fill))
3. OLIVE-GRAY FAT CLAY (CH)(5 YR 5/2) Soft, wet, 80-90% clay, 10-20% organics (most as root structures at top) and sand lenses, which become thicker with depth (Native)
4. DARK GRAY POORLY-GRADED SAND (SP)(5 YR 4/1) Medium dense, wet, 100% fine to medium sand (Native)

231TP101



EXPLANATION

AC ASPHALT 3 IN. AT SURFACE

BASEROCK

1A RED CHERT, little to no fines to 1.5 to 2.0 ft bgs

1B VERY DARK GRAYISH BROWN SANDY LEAN CLAY (CL)(10 YR 3/2) Soft, moist to wet, 70% clay, 30% sand, trace brick, metal

2. YELLOWISH BROWN SANDY LEAN CLAY (CL)(10 YR 5/6) Hard, moist, 60% clay/fines, 40% sand, grades into clay below compacted with white deposit ($CaCO_3$?) on top surface
3. DARK OLIVE-GRAY FAT CLAY (CH)(5 YR 3/2) Soft, moist to wet, 90% clay, 10% sand with inclusions (Fill)
4. DARK OLIVE-GRAY POORLY GRADED SAND (SP)(5 YR 3/2) Loose, wet (flowing at base), 90% sand, 10% fines with wood, nails (Fill)
5. OLIVE-GRAY ORGANIC FAT CLAY (CH)(5 YR 5/2) Soft, wet, 60-70% clay, 30-40% organics, primarily roots (Native), some color variation to very dark grayish brown (10 YR 3/2)
6. DARK GRAY POORLY GRADED SAND (SP)(5 YR 4/1) Medium dense, wet ,100% fine-med sand, trace organics
7. DARK GRAY FAT CLAY (CH)(5 YR 4/1) Soft, wet, 100% clay, trace organics

4089041001052.DWG 0.0
20060421.1431

MACTEC

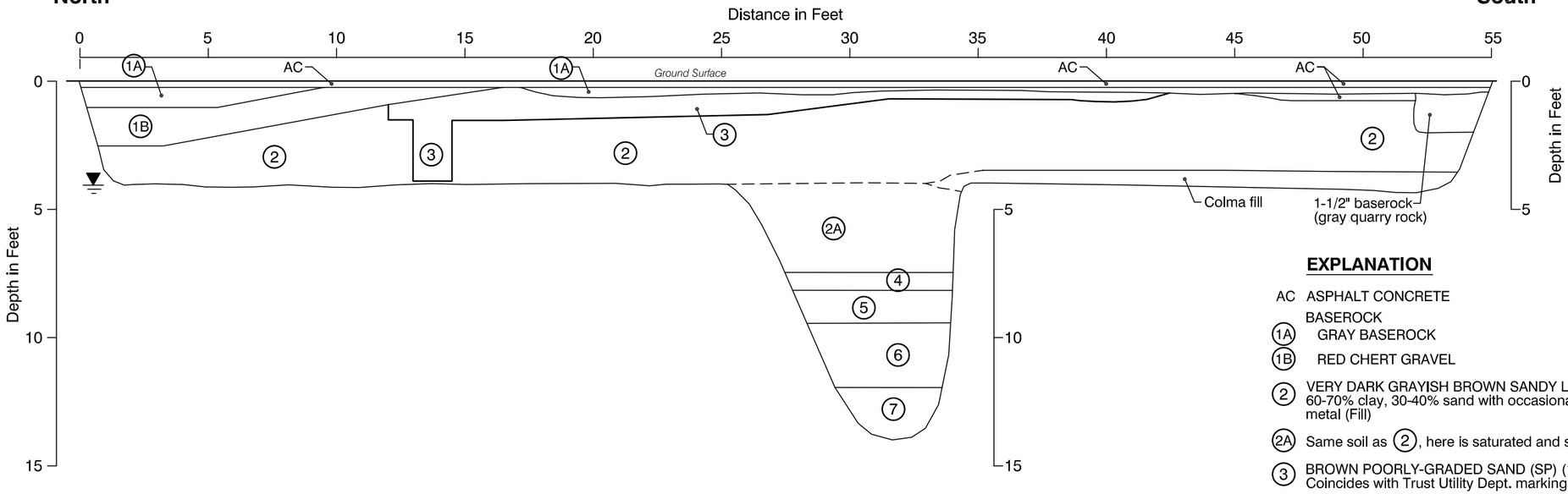
Logs of Test Pits 231TP100 and 231TP101

PLATE

A-4

DRAWN	JOB NUMBER	CHECKED	CHCK'D DATE	APPROVED	APPRV'D DATE
CN	4089041001 109		03/06		

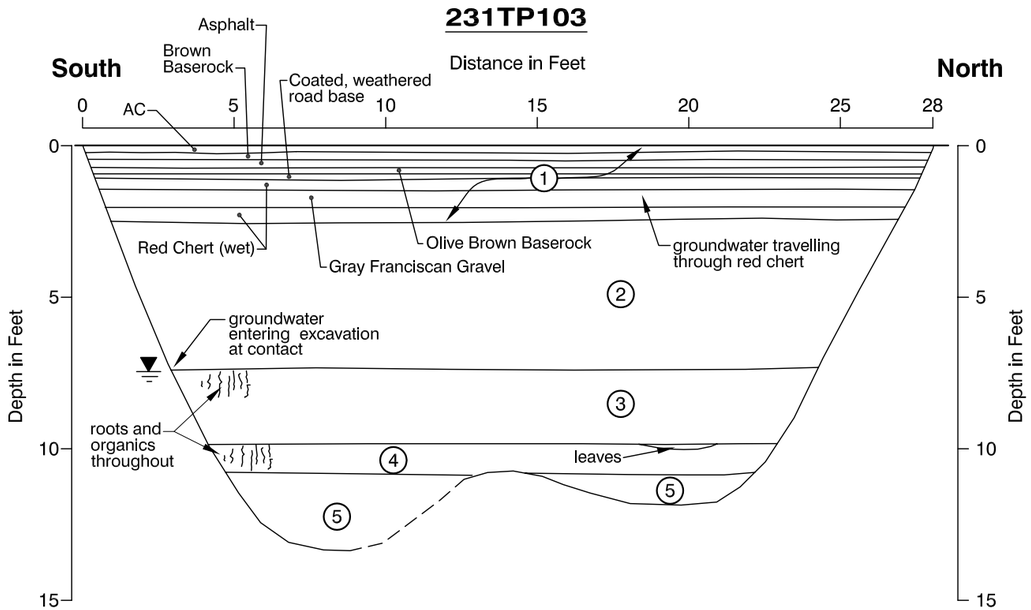
231TP102



EXPLANATION

- AC ASPHALT CONCRETE
- BASEROCK
- (1A) GRAY BASEROCK
- (1B) RED CHERT GRAVEL
- (2) VERY DARK GRAYISH BROWN SANDY LEAN CLAY (CL) (10YR 3/2) Soft to firm, moist to wet, 60-70% clay, 30-40% sand with occasional gravel and sparse debris, including brick, wood, glass, metal (Fill)
- (2A) Same soil as (2), here is saturated and soft (Fill)
- (3) BROWN POORLY-GRADED SAND (SP) (10YR 5/3) Loose, moist, 100% sand (Fill). Coincides with Trust Utility Dept. markings for abandoned sanitary sewer.
- (4) BLACK ORGANIC FAT CLAY (CH) (10YR 2/1) Soft, wet, 60% clay, 30% organics, including leaves and roots (Native)
- (5) GRAY FAT CLAY (CH) (5Y 5/1) Soft, wet, 80% clay, 20% organics (roots, perhaps pickleweed), some thin laminations of sand (Native)
- (6) DARK BLUISH GRAY POORLY-GRADED SAND (SP) (5B 4/1) Loose, saturated, 90% fine to medium sand, 10% fines (Native)
- (7) LIGHT YELLOWISH BROWN POORLY-GRADED SAND (SP)(10YR 6/4) Medium dense, saturated, 90% fine to medium sand, 10% fines with iron oxide banding and soft iron oxide inclusions (Native)

231TP103



EXPLANATION

- AC ASPHALT CONCRETE
- (1) ROAD BASE MATERIAL (GC/GP/GW) - refer to details
- (2) VERY DARK GRAYISH BROWN SANDY LEAN CLAY (CL) (10 YR 3/2) Soft, moist to wet, 70% clay/fines, 30% fine sand; inclusions of grayish clay and clayey sand (Fill)
- (3) OLIVE-GRAY CLAYEY SAND (SC)(2.5 YR 4/2) Firm, wet, 70% fine sand, 30% clay/fines, consistent in color and texture with the top of Colma Formation; has root development, no topsoil horizon, looks disturbed in places (possibly slumps/slope wash)
- (4) DARK BROWN ORGANIC CLAY (CL) (10 YR 3/3) Soft to medium firm, moist, 60% clay/fines, 40% organics, with roots growing through sandy laminations (Native)
- (5) DARK OLIVE-GRAY POORLY GRADED SAND (SP) (5 YR 3/2) Loose, wet (saturated), 95% fine to medium sand, 5% fines, trace organics, no stratigraphy, massive (possibly dune sand - Native)

4089041001052.DWG 1.0
20060310.0848

MACTEC

Logs of Test Pits 231TP102 and 231TP103

PLATE **A-5**

DRAWN	JOB NUMBER	CHECKED	CHCK'D DATE	APPROVED	APPRV'D DATE
CN	4089041001 109		03/06		



MACTEC

Photographs of concrete inlet observed in Trench 38TP100

Site Photographs
Environmental Field Report
Subsurface Geoarchaeological Survey of the Building 207/231 Area
Presidio of San Francisco, California

PHOTO

1

MACTEC Engineering and Consulting, Inc.

DRAWN	JOB NUMBER	CHECKED/DATE	APPROVED/DATE
AH	4089041001		



MACTEC

Photographs of concrete inlet observed in Trench 38TP100

Site Photographs
Environmental Field Report
Subsurface Geoarchaeological Survey of the Building 207/231 Area
Presidio of San Francisco, California

PHOTO

2

MACTEC Engineering and Consulting, Inc.

DRAWN	JOB NUMBER	CHECKED/DATE	APPROVED/DATE
AH	4089041001		



Photographs of concrete inlet observed in Trench 38TP100

PHOTO 2

MACTEC

Site Photographs
Environmental Field Report
Subsurface Geoarchaeological Survey of the Building 207/231 Area
Presidio of San Francisco, California

MACTEC Engineering and Consulting, Inc.

DRAWN	JOB NUMBER	CHECKED/DATE	APPROVED/DATE
AH	4089041001		

ATTACHMENT B

LABORATORY ANALYTICAL REPORT

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Number 184508

Mactec, Inc.
5341 Old Redwood Hwy
Petaluma, CA 94954

Project#: 4089041001.109
Location: PT Presidio Bldg 231/207

Sample ID	Lab ID
207TP100(5.0)	184508-001
207TP100(9.5)	184508-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Signature: _____ Date: 2/23/06
Operations Manager

Signature: _____ Date: 2/23/06
Project Manager

NELAP # 01107CA

Page 1 of ___

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**184508**
Client:	**Mactec, Inc.**
Project:	**4089041001.109**
Location:	**PT Presidio Bldg 231/207**
Request Date:	**01/24/06**
Samples Received:	**01/24/06**

This hardcopy data package contains sample and QC results for two soil samples, requested for the above referenced project on 01/24/06. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
Methylene chloride was detected between the MDL and the RL in the method blank for batch 109907; this analyte was detected in the sample at a level at least ten times that of the blank. Methylene chloride was detected above the RL in 207TP100(5.0) (lab # 184508-001) and 207TP100(9.5) (lab # 184508-002); this analyte is a common laboratory contaminant. No other analytical problems were encountered.

Semivolatile Organics by GC/MS SIM (EPA 8270C-SIM):
Low internal standard responses were observed for chrysene-d12 and perylene-d12 in 207TP100(5.0) (lab # 184508-001). No other analytical problems were encountered.

Pesticides (EPA 8081A):
High ICAL percent RSD (relative standard deviation) was observed for endosulfan I in the calibration analyzed 01/25/06 23:10; average ICAL %RSD met method requirements, and affected data was qualified with "b". High responses were observed for 4,4'-DDD and endrin ketone in the CCV analyzed 01/31/06 03:28; average CCV drift met method requirements, and these analytes were not detected at or above the RL in the associated samples. Low responses were observed for 4,4'-DDT and methoxychlor in the CCV analyzed 01/27/06 19:26; average CCV drift met method requirements. High surrogate recoveries were observed for decachlorobiphenyl and TCMX in 207TP100(5.0) (lab # 184508-001) and the MS/MSD of 207TP100(5.0) (lab # 184508-001). Endosulfan I was detected between the MDL and the RL in the method blank for batch 109895; this analyte was not detected in samples at or above the RL. No other analytical problems were encountered.

Polychlorinated Biphenyls (PCBs) (EPA 8082):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**184508**
Client:	**Mactec, Inc.**
Project:	**4089041001.109**
Location:	**PT Presidio Bldg 231/207**
Request Date:	**01/24/06**
Samples Received:	**01/24/06**

Metals (EPA 6010B and EPA 7471A):

Low recoveries were observed for antimony in the MS/MSD of 207TP100(5.0) (lab # 184508-001); the BS/BSD were within limits, and the associated RPD was within limits. High recovery was observed for nickel in the MSD of 207TP100(5.0) (lab # 184508-001); the BS/BSD were within limits, and the associated RPD was within limits. Chromium, lead, and thallium were detected between the MDL and the RL in the method blank for batch 110039; these analytes were either not detected in samples at or above the RL, or detected at a level at least ten times that of the blank. No other analytical problems were encountered.

Moisture (ASTM D2216/CLP):

No analytical problems were encountered.

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Analytical Laboratories, Since 1878

Total Volatile Hydrocarbons

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	01/23/06
Units:	mg/Kg	Received:	01/24/06
Batch#:	109884	Analyzed:	01/26/06

Field ID:	207TP100(5.0)	Basis:	dry
Type:	SAMPLE	Moisture:	21%
Lab ID:	184508-001	Diln Fac:	5.000

Analyte	Result	RL	MDL
Gasoline C7-C12	21 L Y	6.3	0.86

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	65-135

Field ID:	207TP100(9.5)	Basis:	dry
Type:	SAMPLE	Moisture:	21%
Lab ID:	184508-002	Diln Fac:	1.000

Analyte	Result	RL	MDL
Gasoline C7-C12	ND	1.4	0.18

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	89	65-135

Type:	BLANK	Basis:	as received
Lab ID:	QC325696	Diln Fac:	1.000

Analyte	Result	RL	MDL
Gasoline C7-C12	ND	0.20	0.027

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	94	65-135

L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

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Analytical Laboratories, Since 1878

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC325697	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109884
Units:	mg/Kg	Analyzed:	01/26/06

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	4.564	91	75-125

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	100	65-135

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Batch QC Report

Total Volatile Hydrocarbons

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8015B
Field ID:	207TP100(9.5)	Diln Fac:	1.000
MSS Lab ID:	184508-002	Batch#:	109884
Matrix:	Soil	Sampled:	01/23/06
Units:	mg/Kg	Received:	01/24/06
Basis:	dry		

Type:	MS	Moisture:	21%
Lab ID:	QC325698	Analyzed:	01/27/06

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<0.1839	13.32	8.780	66	65-135

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	107	65-135

Type:	MSD	Moisture:	21%
Lab ID:	QC325699	Analyzed:	01/26/06

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	13.76	10.09	73	65-135	11	35

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	65-135

RPD= Relative Percent Difference

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Total Extractable Hydrocarbons

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	SHAKER TABLE
Project#:	4089041001.109	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	01/23/06
Units:	mg/Kg	Received:	01/24/06
Diln Fac:	1.000	Prepared:	01/30/06
Batch#:	109974		

Field ID:	207TP100(5.0)	Moisture:	21%
Type:	SAMPLE	Analyzed:	01/31/06
Lab ID:	184508-001	Cleanup Method:	EPA 3630C
Basis:	dry		

Analyte	Result	RL	MDL
Diesel C12-C24	150 H L Y	1.3	0.44
Fuel Oil C24-C36	390	6.3	1.9

Surrogate	%REC	Limits
Hexacosane	101	65-135

Field ID:	207TP100(9.5)	Moisture:	21%
Type:	SAMPLE	Analyzed:	01/31/06
Lab ID:	184508-002	Cleanup Method:	EPA 3630C
Basis:	dry		

Analyte	Result	RL	MDL
Diesel C12-C24	39 H Y	1.3	0.44
Fuel Oil C24-C36	78	6.3	1.9

Surrogate	%REC	Limits
Hexacosane	107	65-135

Type:	BLANK	Analyzed:	01/30/06
Lab ID:	QC326047	Cleanup Method:	EPA 3630C
Basis:	as received		

Analyte	Result	RL	MDL
Diesel C12-C24	ND	1.0	0.35
Fuel Oil C24-C36	ND	5.0	1.5

Surrogate	%REC	Limits
Hexacosane	100	65-135

H= Heavier hydrocarbons contributed to the quantitation
L= Lighter hydrocarbons contributed to the quantitation
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	SHAKER TABLE
Project#:	4089041001.109	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC326048	Batch#:	109974
Matrix:	Soil	Prepared:	01/30/06
Units:	mg/Kg	Analyzed:	01/30/06
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C12-C24	50.11	58.34	116	65-135

Surrogate	%REC	Limits
Hexacosane	117	65-135

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Batch QC Report

Total Extractable Hydrocarbons

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	SHAKER TABLE
Project#:	4089041001.109	Analysis:	EPA 8015B
Field ID:	230TP100(4.0)	Batch#:	109974
MSS Lab ID:	184591-001	Sampled:	01/27/06
Matrix:	Soil	Received:	01/27/06
Units:	mg/Kg	Prepared:	01/30/06
Basis:	as received	Analyzed:	01/30/06
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC326049

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C12-C24	<0.3480	50.24	49.21	98	65-135

Surrogate	%REC	Limits
Hexacosane	99	65-135

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC326050

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C12-C24	49.60	39.22	79	65-135	21	35

Surrogate	%REC	Limits
Hexacosane	80	65-135

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Purgeable Organics by GC/MS

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Field ID:	207TP100(5.0)	Diln Fac:	0.9259
Lab ID:	184508-001	Batch#:	109867
Matrix:	Soil	Sampled:	01/23/06
Units:	ug/Kg	Received:	01/24/06
Basis:	dry	Analyzed:	01/26/06

Moisture: 21%

Analyte	Result	RL	MDL
Chloromethane	ND	12	2.3
Vinyl Chloride	ND	12	1.8
Bromomethane	ND	12	1.9
Chloroethane	ND	12	2.1
Acetone	3.7 J	23	2.5
1,1-Dichloroethene	ND	5.9	2.6
Methylene Chloride	41	12	2.5
Carbon Disulfide	ND	5.9	2.0
MTBE	12	5.9	2.4
Vinyl Acetate	ND	59	2.2
1,1-Dichloroethane	ND	5.9	2.3
2-Butanone	ND	12	2.5
Chloroform	ND	5.9	2.4
1,1,1-Trichloroethane	ND	5.9	2.4
Carbon Tetrachloride	ND	5.9	2.1
1,2-Dichloroethane	ND	5.9	2.3
Benzene	ND	5.9	2.5
Trichloroethene	ND	5.9	2.4
1,2-Dichloropropane	ND	5.9	2.6
Bromodichloromethane	ND	5.9	2.2
4-Methyl-2-Pentanone	ND	12	2.0
cis-1,3-Dichloropropene	ND	5.9	2.0
Toluene	ND	5.9	2.7
trans-1,3-Dichloropropene	ND	5.9	2.4
1,1,2-Trichloroethane	ND	5.9	3.0
2-Hexanone	ND	12	2.3
Tetrachloroethene	ND	5.9	2.1
Dibromochloromethane	ND	5.9	1.7
Chlorobenzene	ND	5.9	2.4
Ethylbenzene	ND	5.9	2.4
m,p-Xylenes	ND	5.9	5.1
o-Xylene	ND	5.9	2.4
Styrene	ND	5.9	2.1
Bromoform	ND	5.9	1.9
1,1,2,2-Tetrachloroethane	ND	5.9	2.4
1,2-Dichloroethene (total)	ND	5.9	

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	92	70-121
Toluene-d8	91	84-138
Bromofluorobenzene	94	59-113

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Purgeable Organics by GC/MS

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Field ID:	207TP100(9.5)	Diln Fac:	0.9804
Lab ID:	184508-002	Batch#:	109907
Matrix:	Soil	Sampled:	01/23/06
Units:	ug/Kg	Received:	01/24/06
Basis:	dry	Analyzed:	01/27/06

Moisture: 21%

Analyte	Result	RL	MDL
Chloromethane	ND	12	2.5
Vinyl Chloride	ND	12	1.9
Bromomethane	ND	12	2.0
Chloroethane	ND	12	2.3
Acetone	38	25	2.6
1,1-Dichloroethene	ND	6.2	2.7
Methylene Chloride	47	12	2.7
Carbon Disulfide	ND	6.2	2.1
MTBE	7.7	6.2	2.5
Vinyl Acetate	ND	62	2.3
1,1-Dichloroethane	ND	6.2	2.5
2-Butanone	10 J	12	2.7
Chloroform	ND	6.2	2.5
1,1,1-Trichloroethane	ND	6.2	2.5
Carbon Tetrachloride	ND	6.2	2.2
1,2-Dichloroethane	ND	6.2	2.5
Benzene	ND	6.2	2.6
Trichloroethene	ND	6.2	2.5
1,2-Dichloropropane	ND	6.2	2.7
Bromodichloromethane	ND	6.2	2.3
4-Methyl-2-Pentanone	ND	12	2.2
cis-1,3-Dichloropropene	ND	6.2	2.2
Toluene	ND	6.2	2.9
trans-1,3-Dichloropropene	ND	6.2	2.5
1,1,2-Trichloroethane	ND	6.2	3.1
2-Hexanone	ND	12	2.4
Tetrachloroethene	ND	6.2	2.3
Dibromochloromethane	ND	6.2	1.8
Chlorobenzene	ND	6.2	2.5
Ethylbenzene	ND	6.2	2.5
m,p-Xylenes	ND	6.2	5.4
o-Xylene	ND	6.2	2.6
Styrene	ND	6.2	2.2
Bromoform	ND	6.2	2.0
1,1,2,2-Tetrachloroethane	ND	6.2	2.6
1,2-Dichloroethene (total)	ND	6.2	

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	92	70-121
Toluene-d8	92	84-138
Bromofluorobenzene	96	59-113

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC325615	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109867
Units:	ug/Kg	Analyzed:	01/26/06

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	56.34	113	65-135
Benzene	50.00	51.84	104	65-135
Trichloroethene	50.00	54.53	109	65-135
Toluene	50.00	56.27	113	65-135
Chlorobenzene	50.00	55.34	111	65-135

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	81	70-121
Toluene-d8	97	84-138
Bromofluorobenzene	94	59-113

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC325616	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109867
Units:	ug/Kg	Analyzed:	01/26/06

Analyte	Result	RL	MDL
Chloromethane	ND	10	2.0
Vinyl Chloride	ND	10	1.6
Bromomethane	ND	10	1.6
Chloroethane	ND	10	1.8
Acetone	ND	20	2.1
1,1-Dichloroethene	ND	5.0	2.2
Methylene Chloride	ND	10	2.2
Carbon Disulfide	ND	5.0	1.7
MTBE	ND	5.0	2.0
Vinyl Acetate	ND	50	1.9
1,1-Dichloroethane	ND	5.0	2.0
2-Butanone	ND	10	2.1
Chloroform	ND	5.0	2.0
1,1,1-Trichloroethane	ND	5.0	2.0
Carbon Tetrachloride	ND	5.0	1.8
1,2-Dichloroethane	ND	5.0	2.0
Benzene	ND	5.0	2.1
Trichloroethene	ND	5.0	2.0
1,2-Dichloropropane	ND	5.0	2.2
Bromodichloromethane	ND	5.0	1.9
4-Methyl-2-Pentanone	ND	10	1.7
cis-1,3-Dichloropropene	ND	5.0	1.7
Toluene	ND	5.0	2.3
trans-1,3-Dichloropropene	ND	5.0	2.0
1,1,2-Trichloroethane	ND	5.0	2.5
2-Hexanone	ND	10	2.0
Tetrachloroethene	ND	5.0	1.8
Dibromochloromethane	ND	5.0	1.5
Chlorobenzene	ND	5.0	2.0
Ethylbenzene	ND	5.0	2.0
m,p-Xylenes	ND	5.0	4.4
o-Xylene	ND	5.0	2.1
Styrene	ND	5.0	1.8
Bromoform	ND	5.0	1.6
1,1,2,2-Tetrachloroethane	ND	5.0	2.1
1,2-Dichloroethene (total)	ND	5.0	

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	91	70-121
Toluene-d8	93	84-138
Bromofluorobenzene	93	59-113

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Field ID:	207TP100(5.0)	Diln Fac:	0.9259
MSS Lab ID:	184508-001	Batch#:	109867
Matrix:	Soil	Sampled:	01/23/06
Units:	ug/Kg	Received:	01/24/06
Basis:	dry	Analyzed:	01/26/06

Type: MS Moisture: 21%
Lab ID: QC325705

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<2.559	58.60	51.79	88	65-135
Benzene	<2.461	58.60	48.99	84	65-135
Trichloroethene	<2.363	58.60	51.76	88	65-135
Toluene	<2.742	58.60	47.49	81	65-135
Chlorobenzene	<2.399	58.60	50.73	87	65-135

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	91	70-121
Toluene-d8	93	84-138
Bromofluorobenzene	95	59-113

Type: MSD Moisture: 21%
Lab ID: QC325706

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	58.60	53.63	92	65-135	3	35
Benzene	58.60	48.69	83	65-135	1	35
Trichloroethene	58.60	52.33	89	65-135	1	35
Toluene	58.60	48.08	82	65-135	1	35
Chlorobenzene	58.60	50.41	86	65-135	1	35

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	90	70-121
Toluene-d8	92	84-138
Bromofluorobenzene	97	59-113

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC325777	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109907
Units:	ug/Kg	Analyzed:	01/27/06

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	54.86	110	65-135
Benzene	50.00	50.57	101	65-135
Trichloroethene	50.00	53.32	107	65-135
Toluene	50.00	50.64	101	65-135
Chlorobenzene	50.00	52.12	104	65-135

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	85	70-121
Toluene-d8	93	84-138
Bromofluorobenzene	97	59-113

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Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC325778	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109907
Units:	ug/Kg	Analyzed:	01/27/06

Analyte	Result	RL	MDL
Chloromethane	ND	10	2.0
Vinyl Chloride	ND	10	1.6
Bromomethane	ND	10	1.6
Chloroethane	ND	10	1.8
Acetone	ND	20	2.1
1,1-Dichloroethene	ND	5.0	2.2
Methylene Chloride	3.5 J	10	2.2
Carbon Disulfide	ND	5.0	1.7
MTBE	ND	5.0	2.0
Vinyl Acetate	ND	50	1.9
1,1-Dichloroethane	ND	5.0	2.0
2-Butanone	ND	10	2.1
Chloroform	ND	5.0	2.0
1,1,1-Trichloroethane	ND	5.0	2.0
Carbon Tetrachloride	ND	5.0	1.8
1,2-Dichloroethane	ND	5.0	2.0
Benzene	ND	5.0	2.1
Trichloroethene	ND	5.0	2.0
1,2-Dichloropropane	ND	5.0	2.2
Bromodichloromethane	ND	5.0	1.9
4-Methyl-2-Pentanone	ND	10	1.7
cis-1,3-Dichloropropene	ND	5.0	1.7
Toluene	ND	5.0	2.3
trans-1,3-Dichloropropene	ND	5.0	2.0
1,1,2-Trichloroethane	ND	5.0	2.5
2-Hexanone	ND	10	2.0
Tetrachloroethene	ND	5.0	1.8
Dibromochloromethane	ND	5.0	1.5
Chlorobenzene	ND	5.0	2.0
Ethylbenzene	ND	5.0	2.0
m,p-Xylenes	ND	5.0	4.4
o-Xylene	ND	5.0	2.1
Styrene	ND	5.0	1.8
Bromoform	ND	5.0	1.6
1,1,2,2-Tetrachloroethane	ND	5.0	2.1
1,2-Dichloroethene (total)	ND	5.0	

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	91	70-121
Toluene-d8	94	84-138
Bromofluorobenzene	92	59-113

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Diln Fac:	0.9615
MSS Lab ID:	184579-002	Batch#:	109907
Matrix:	Soil	Sampled:	01/26/06
Units:	ug/Kg	Received:	01/26/06
Basis:	as received	Analyzed:	01/27/06

Type: MS Lab ID: QC325835

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<2.100	48.08	38.43	80	65-135
Benzene	<2.019	48.08	35.47	74	65-135
Trichloroethene	<1.939	48.08	36.59	76	65-135
Toluene	<2.250	48.08	35.50	74	65-135
Chlorobenzene	<1.968	48.08	33.98	71	65-135

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	92	70-121
Toluene-d8	95	84-138
Bromofluorobenzene	95	59-113

Type: MSD Lab ID: QC325836

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	48.08	38.80	81	65-135	1	35
Benzene	48.08	34.41	72	65-135	3	35
Trichloroethene	48.08	36.02	75	65-135	2	35
Toluene	48.08	34.01	71	65-135	4	35
Chlorobenzene	48.08	33.47	70	65-135	2	35

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	92	70-121
Toluene-d8	92	84-138
Bromofluorobenzene	95	59-113

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Semivolatile Organics by GC/MS SIM

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8270C-SIM
Field ID:	207TP100(5.0)	Batch#:	109942
Lab ID:	184508-001	Sampled:	01/23/06
Matrix:	Soil	Received:	01/24/06
Units:	ug/Kg	Prepared:	01/29/06
Basis:	dry	Analyzed:	01/31/06
Diln Fac:	3.000		

Moisture: 21%

Analyte	Result	RL	MDL
Naphthalene	19	19	4.1
Acenaphthylene	8.1 J	19	2.9
Acenaphthene	4.9 J	19	3.5
Fluorene	4.6 J	19	3.1
Phenanthrene	33	19	2.6
Anthracene	18 J	19	2.4
Fluoranthene	50	19	2.6
Pyrene	110	19	3.7
Benzo(a)anthracene	38	19	2.4
Chrysene	52	19	2.7
Benzo(b)fluoranthene	32	19	2.3
Benzo(k)fluoranthene	33	19	4.2
Benzo(a)pyrene	45	19	2.9
Indeno(1,2,3-cd)pyrene	20	19	2.8
Dibenz(a,h)anthracene	12 J	19	2.8
Benzo(g,h,i)perylene	39	19	2.6

Surrogate	%REC	Limits
Nitrobenzene-d5	127	33-151
2-Fluorobiphenyl	95	34-126
Terphenyl-d14	107	42-135

J= Estimated value
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Semivolatile Organics by GC/MS SIM

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8270C-SIM
Field ID:	207TP100(9.5)	Batch#:	109942
Lab ID:	184508-002	Sampled:	01/23/06
Matrix:	Soil	Received:	01/24/06
Units:	ug/Kg	Prepared:	01/29/06
Basis:	dry	Analyzed:	01/31/06
Diln Fac:	5.000		

Moisture: 21%

Analyte	Result	RL	MDL
Naphthalene	17 J	32	6.8
Acenaphthylene	6.7 J	32	4.8
Acenaphthene	170	32	5.9
Fluorene	220	32	5.2
Phenanthrene	1,200	32	4.4
Anthracene	74	32	4.0
Fluoranthene	760	32	4.4
Pyrene	570	32	6.2
Benzo(a)anthracene	110	32	4.0
Chrysene	110	32	4.6
Benzo(b)fluoranthene	43	32	3.8
Benzo(k)fluoranthene	35	32	7.1
Benzo(a)pyrene	38	32	4.8
Indeno(1,2,3-cd)pyrene	26 J	32	4.6
Dibenz(a,h)anthracene	11 J	32	4.6
Benzo(g,h,i)perylene	37	32	4.3

Surrogate	%REC	Limits
Nitrobenzene-d5	99	33-151
2-Fluorobiphenyl	85	34-126
Terphenyl-d14	102	42-135

J= Estimated value
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8270C-SIM
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC325917	Batch#:	109942
Matrix:	Soil	Prepared:	01/29/06
Units:	ug/Kg	Analyzed:	01/30/06
Basis:	as received		

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	0.76
Acenaphthylene	ND	5.0	1.5
Acenaphthene	ND	5.0	0.76
Fluorene	ND	5.0	1.1
Phenanthrene	ND	5.0	0.94
Anthracene	ND	5.0	1.2
Fluoranthene	ND	5.0	1.3
Pyrene	ND	5.0	1.1
Benzo(a)anthracene	ND	5.0	1.0
Chrysene	ND	5.0	0.96
Benzo(b)fluoranthene	ND	5.0	1.1
Benzo(k)fluoranthene	ND	5.0	0.59
Benzo(a)pyrene	ND	5.0	0.89
Indeno(1,2,3-cd)pyrene	ND	5.0	0.96
Dibenz(a,h)anthracene	ND	5.0	0.88
Benzo(g,h,i)perylene	ND	5.0	0.87

Surrogate	%REC	Limits
Nitrobenzene-d5	77	33-151
2-Fluorobiphenyl	74	34-126
Terphenyl-d14	66	42-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8270C-SIM
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC325918	Batch#:	109942
Matrix:	Soil	Prepared:	01/29/06
Units:	ug/Kg	Analyzed:	01/30/06
Basis:	as received		

Analyte	Spiked	Result	%REC	Limits
Acenaphthene	32.98	22.68	69	49-120
Pyrene	32.98	20.53	62	48-120

Surrogate	%REC	Limits
Nitrobenzene-d5	88	33-151
2-Fluorobiphenyl	74	34-126
Terphenyl-d14	68	42-135

Curtis & Tompkins, Ltd.
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Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8270C-SIM
Field ID:	DUP(012706)	Batch#:	109942
MSS Lab ID:	184591-002	Sampled:	01/27/06
Matrix:	Soil	Received:	01/27/06
Units:	ug/Kg	Prepared:	01/29/06
Basis:	as received	Analyzed:	01/30/06
Diln Fac:	1.000		

Type: MS Lab ID: QC325919

Analyte	MSS Result	Spiked	Result	%REC	Limits
Acenaphthene	<0.7633	33.49	24.00	72	52-125
Pyrene	<1.130	33.49	23.59	70	39-135

Surrogate	%REC	Limits
Nitrobenzene-d5	87	33-151
2-Fluorobiphenyl	77	34-126
Terphenyl-d14	77	42-135

Type: MSD Lab ID: QC325920

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Acenaphthene	33.75	24.55	73	52-125	1	35
Pyrene	33.75	24.36	72	39-135	2	44

Surrogate	%REC	Limits
Nitrobenzene-d5	88	33-151
2-Fluorobiphenyl	79	34-126
Terphenyl-d14	77	42-135

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Organochlorine Pesticides

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8081A
Field ID:	207TP100(5.0)	Batch#:	109895
Lab ID:	184508-001	Sampled:	01/23/06
Matrix:	Soil	Received:	01/24/06
Units:	ug/Kg	Prepared:	01/27/06
Basis:	dry	Analyzed:	01/31/06
Diln Fac:	5.000		

Moisture: 21%

Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
alpha-BHC	ND	11	4.2
beta-BHC	ND	11	2.5
gamma-BHC	ND	11	2.7
delta-BHC	ND	11	2.2
Heptachlor	ND	11	2.7
Aldrin	ND	11	2.8
Heptachlor epoxide	ND	11	3.0
Endosulfan I	ND	11	4.4
Dieldrin	ND	21	6.3
4,4'-DDE	ND	21	6.2
Endrin	ND	21	5.7
Endosulfan II	ND	21	6.8
Endosulfan sulfate	ND	21	5.3
4,4'-DDD	ND	21	5.7
Endrin ketone	ND	21	5.4
Endrin aldehyde	ND	21	5.6
4,4'-DDT	ND	21	4.9
alpha-Chlordane	ND	11	3.1
gamma-Chlordane	ND	11	3.0
Methoxychlor	ND	110	27
Toxaphene	ND	380	74

Surrogate	%REC	Limits
TCMX	144 *	65-135
Decachlorobiphenyl	155 *	65-135

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

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Analytical Laboratories, Since 1878

Organochlorine Pesticides

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8081A
Field ID:	207TP100(9.5)	Batch#:	109895
Lab ID:	184508-002	Sampled:	01/23/06
Matrix:	Soil	Received:	01/24/06
Units:	ug/Kg	Prepared:	01/27/06
Basis:	dry	Analyzed:	01/31/06
Diln Fac:	5.000		

Moisture: 21%

Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
alpha-BHC	ND	11	4.2
beta-BHC	ND	11	2.5
gamma-BHC	ND	11	2.7
delta-BHC	ND	11	2.2
Heptachlor	ND	11	2.7
Aldrin	ND	11	2.8
Heptachlor epoxide	ND	11	3.0
Endosulfan I	ND	11	4.3
Dieldrin	ND	21	6.2
4,4'-DDE	ND	21	6.1
Endrin	ND	21	5.7
Endosulfan II	ND	21	6.8
Endosulfan sulfate	ND	21	5.3
4,4'-DDD	ND	21	5.7
Endrin ketone	ND	21	5.4
Endrin aldehyde	ND	21	5.5
4,4'-DDT	ND	21	4.8
alpha-Chlordane	ND	11	3.1
gamma-Chlordane	ND	11	3.0
Methoxychlor	ND	110	27
Toxaphene	ND	380	73

Surrogate	%REC	Limits
TCMX	127	65-135
Decachlorobiphenyl	128	65-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Organochlorine Pesticides

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC325723	Batch#:	109895
Matrix:	Soil	Prepared:	01/27/06
Units:	ug/Kg	Analyzed:	01/27/06
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.11
beta-BHC	ND	1.7	0.28
gamma-BHC	ND	1.7	0.083
delta-BHC	ND	1.7	0.17
Heptachlor	ND	1.7	0.25
Aldrin	ND	1.7	0.26
Heptachlor epoxide	ND	1.7	0.35
Endosulfan I	0.51 C J b	1.7	0.25
Dieldrin	ND	3.3	0.45
4,4'-DDE	ND	3.3	0.38
Endrin	ND	3.3	0.68
Endosulfan II	ND	3.3	0.61
Endosulfan sulfate	ND	3.3	0.64
4,4'-DDD	ND	3.3	0.86
Endrin ketone	ND	3.3	0.38
Endrin aldehyde	ND	3.3	0.28
4,4'-DDT	ND #	3.3	0.38
alpha-Chlordane	ND	1.7	0.27
gamma-Chlordane	ND	1.7	0.30
Methoxychlor	ND #	17	4.2
Toxaphene	ND	59	14

Surrogate	%REC	Limits
TCMX	95	65-135
Decachlorobiphenyl	91	65-135

#= CCV drift outside limits; average CCV drift within limits per method requirements
C= Presence confirmed, but RPD between columns exceeds 40%
J= Estimated value
b= See narrative
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Organochlorine Pesticides

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC325724	Batch#:	109895
Matrix:	Soil	Prepared:	01/27/06
Units:	ug/Kg	Analyzed:	01/27/06
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.28	12.92	97	65-135
Heptachlor	13.28	13.45	101	65-135
Aldrin	13.28	12.94	97	65-135
Dieldrin	26.56	24.32	92	65-135
Endrin	26.56	24.52	92	65-135
4,4'-DDT	26.56	25.79 #	97	65-135

Surrogate	%REC	Limits
TCMX	124	65-135
Decachlorobiphenyl	99	65-135

#= CCV drift outside limits; average CCV drift within limits per method requirements

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Organochlorine Pesticides

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8081A
Field ID:	207TP100(5.0)	Batch#:	109895
MSS Lab ID:	184508-001	Sampled:	01/23/06
Matrix:	Soil	Received:	01/24/06
Units:	ug/Kg	Prepared:	01/27/06
Basis:	dry	Analyzed:	01/31/06
Diln Fac:	5.000		

Type: MS
Lab ID: QC325725
Moisture: 21%
Cleanup Method: EPA 3620B

Analyte	MSS Result	Spiked	Result	%REC	Limits
gamma-BHC	<2.688	16.65	19.80	119	65-135
Heptachlor	<2.704	16.65	20.81	125	65-135
Aldrin	<2.829	16.65	19.99	120	65-135
Dieldrin	<6.259	33.30	40.48	122	65-135
Endrin	<5.713	33.30	39.38	118	65-135
4,4'-DDT	<4.894	33.30	32.02	96	65-135

Surrogate	%REC	Limits
TCMX	148 *	65-135
Decachlorobiphenyl	139 *	65-135

Type: MSD
Lab ID: QC325726
Moisture: 21%
Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	17.04	20.54	121	65-135	1	35
Heptachlor	17.04	20.77	122	65-135	2	35
Aldrin	17.04	20.14	118	65-135	2	35
Dieldrin	34.07	41.60	122	65-135	0	35
Endrin	34.07	40.59	119	65-135	1	35
4,4'-DDT	34.07	32.49	95	65-135	1	35

Surrogate	%REC	Limits
TCMX	146 *	65-135
Decachlorobiphenyl	136 *	65-135

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Polychlorinated Biphenyls (PCBs)

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/06
Units:	ug/Kg	Received:	01/24/06
Diln Fac:	1.000	Prepared:	01/26/06
Batch#:	109866		

Field ID:	207TP100(5.0)	Moisture:	21%
Type:	SAMPLE	Analyzed:	01/28/06
Lab ID:	184508-001	Cleanup Method:	EPA 3665A
Basis:	dry		

Analyte	Result	RL	MDL
Aroclor-1016	ND	15	6.2
Aroclor-1221	ND	30	17
Aroclor-1232	ND	15	3.4
Aroclor-1242	ND	15	5.5
Aroclor-1248	ND	15	1.1
Aroclor-1254	ND	15	3.1
Aroclor-1260	ND	15	6.0

Surrogate	%REC	Limits
TCMX	113	65-135
Decachlorobiphenyl	109	65-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Polychlorinated Biphenyls (PCBs)

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/23/06
Units:	ug/Kg	Received:	01/24/06
Diln Fac:	1.000	Prepared:	01/26/06
Batch#:	109866		

Field ID:	207TP100(9.5)	Moisture:	21%
Type:	SAMPLE	Analyzed:	01/28/06
Lab ID:	184508-002	Cleanup Method:	EPA 3665A
Basis:	dry		

Analyte	Result	RL	MDL
Aroclor-1016	ND	15	6.2
Aroclor-1221	ND	30	17
Aroclor-1232	ND	15	3.4
Aroclor-1242	ND	15	5.5
Aroclor-1248	ND	15	1.1
Aroclor-1254	ND	15	3.1
Aroclor-1260	ND	15	6.0

Surrogate	%REC	Limits
TCMX	110	65-135
Decachlorobiphenyl	123	65-135

Type:	BLANK	Analyzed:	01/26/06
Lab ID:	QC325611	Cleanup Method:	EPA 3665A
Basis:	as received		

Analyte	Result	RL	MDL
Aroclor-1016	ND	12	4.9
Aroclor-1221	ND	24	13
Aroclor-1232	ND	12	2.7
Aroclor-1242	ND	12	4.4
Aroclor-1248	ND	12	0.85
Aroclor-1254	ND	12	2.4
Aroclor-1260	ND	12	4.7

Surrogate	%REC	Limits
TCMX	96	65-135
Decachlorobiphenyl	107	65-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC325612	Batch#:	109866
Matrix:	Soil	Prepared:	01/26/06
Units:	ug/Kg	Analyzed:	01/26/06
Basis:	as received		

Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits
Aroclor-1221	333.2	338.3	102	65-135

Surrogate	%REC	Limits
TCMX	113	65-135
Decachlorobiphenyl	126	65-135

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	109866
MSS Lab ID:	184544-003	Sampled:	01/25/06
Matrix:	Soil	Received:	01/25/06
Units:	ug/Kg	Prepared:	01/26/06
Basis:	dry	Analyzed:	01/26/06
Diln Fac:	1.000		

Type: MS
Lab ID: QC325613
Moisture: 12%
Cleanup Method: EPA 3665A

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1221	<14.83	379.0	335.5	89	65-135

Surrogate	%REC	Limits
TCMX	101	65-135
Decachlorobiphenyl	105	65-135

Type: MSD
Lab ID: QC325614
Moisture: 12%
Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1221	381.3	370.6	97	65-135	9	35

Surrogate	%REC	Limits
TCMX	107	65-135
Decachlorobiphenyl	115	65-135

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

California Title 26 Metals

Lab #:	184508	Project#:	4089041001.109
Client:	Mactec, Inc.	Location:	PT Presidio Bldg 231/207
Field ID:	207TP100(5.0)	Basis:	dry
Lab ID:	184508-001	Diln Fac:	1.000
Matrix:	Soil	Sampled:	01/23/06
Units:	mg/Kg	Received:	01/24/06

Moisture: 21%

Analyte	Result	RL	MDL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	0.75 J	4.0	0.14	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Arsenic	3.2	0.34	0.13	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Barium	43	0.67	0.069	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Beryllium	0.16	0.13	0.013	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Cadmium	0.28 J	0.34	0.031	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Chromium	79	0.67	0.045	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Cobalt	8.5	1.3	0.034	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Copper	15	0.67	0.064	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Lead	47	0.20	0.071	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Mercury	0.10	0.041	0.0078	109930	01/28/06	01/28/06	METHOD	EPA 7471A
Molybdenum	0.43 J	1.3	0.030	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Nickel	48	1.3	0.041	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Selenium	0.18 J	0.34	0.10	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Silver	0.81	0.34	0.058	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Thallium	0.21 J	0.34	0.041	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Vanadium	43	0.67	0.043	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Zinc	78	1.3	0.14	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B

J= Estimated value
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

California Title 26 Metals

Lab #:	184508	Project#:	4089041001.109
Client:	Mactec, Inc.	Location:	PT Presidio Bldg 231/207
Field ID:	207TP100(9.5)	Basis:	dry
Lab ID:	184508-002	Diln Fac:	1.000
Matrix:	Soil	Sampled:	01/23/06
Units:	mg/Kg	Received:	01/24/06

Moisture: 21%

Analyte	Result	RL	MDL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	0.39 J	3.7	0.13	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Arsenic	4.0	0.31	0.12	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Barium	63	0.61	0.063	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Beryllium	0.30	0.12	0.012	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Cadmium	0.18 J	0.31	0.028	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Chromium	57	0.61	0.041	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Cobalt	8.5	1.2	0.031	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Copper	18	0.61	0.058	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Lead	15	0.18	0.065	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Mercury	0.10	0.037	0.0071	109930	01/28/06	01/28/06	METHOD	EPA 7471A
Molybdenum	1.6	1.2	0.027	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Nickel	49	1.2	0.037	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Selenium	ND	0.31	0.095	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Silver	ND	0.31	0.053	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Thallium	0.50	0.31	0.037	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Vanadium	45	0.61	0.039	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Zinc	45	1.2	0.13	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	METHOD
Project#:	4089041001.109	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC325876	Batch#:	109930
Matrix:	Soil	Prepared:	01/28/06
Units:	mg/Kg	Analyzed:	01/28/06

Result	RL	MDL
ND	0.020	0.0038

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	METHOD
Project#:	4089041001.109	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109930
Units:	mg/Kg	Prepared:	01/28/06
Basis:	as received	Analyzed:	01/28/06

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC325877	0.5000	0.5840	117	75-125		
BSD	QC325878	0.5000	0.5350	107	75-125	9	35

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	METHOD
Project#:	4089041001.109	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	109930
MSS Lab ID:	184578-001	Sampled:	01/26/06
Matrix:	Soil	Received:	01/27/06
Units:	mg/Kg	Prepared:	01/28/06
Basis:	as received	Analyzed:	01/28/06

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC325879	0.1280	0.7353	0.8441	97	75-125		
MSD	QC325880		0.6944	0.8375	102	75-125	4	35

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
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Batch QC Report

California Title 26 Metals

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	METHOD
Project#:	4089041001.109	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Field ID:	ZZZZZZZZZZ	Diln Fac:	5.000
Type:	Serial Dilution	Batch#:	109930
MSS Lab ID:	184578-001	Sampled:	01/26/06
Lab ID:	QC325881	Received:	01/27/06
Matrix:	Soil	Analyzed:	01/28/06
Units:	mg/Kg		

MSS Result	MSS RL	Result	RL	% Diff Lim
0.1280	0.02439	0.1299	0.1220	10

RL= Reporting Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3050B
Project#:	4089041001.109	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC326334	Batch#:	110039
Matrix:	Soil	Prepared:	02/01/06
Units:	mg/Kg	Analyzed:	02/01/06
Basis:	as received		

Analyte	Result	RL	MDL
Antimony	ND	3.0	0.11
Arsenic	ND	0.25	0.099
Barium	ND	0.50	0.051
Beryllium	ND	0.10	0.0099
Cadmium	ND	0.25	0.023
Chromium	0.054 J	0.50	0.034
Cobalt	ND	1.0	0.025
Copper	ND	0.50	0.047
Lead	0.054 J	0.15	0.053
Molybdenum	ND	1.0	0.022
Nickel	ND	1.0	0.030
Selenium	ND	0.25	0.078
Silver	ND	0.25	0.043
Thallium	0.036 J	0.25	0.031
Vanadium	ND	0.50	0.032
Zinc	ND	1.0	0.11

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3050B
Project#:	4089041001.109	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	110039
Units:	mg/Kg	Prepared:	02/01/06
Basis:	as received	Analyzed:	02/01/06
Diln Fac:	1.000		

Type: BS Lab ID: QC326335

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	99.13	99	75-125
Arsenic	50.00	50.01	100	75-125
Barium	100.0	102.5	102	75-125
Beryllium	2.500	2.580	103	75-125
Cadmium	10.00	10.28	103	75-125
Chromium	100.0	101.5	102	75-125
Cobalt	25.00	24.80	99	75-125
Copper	12.50	12.38	99	75-125
Lead	100.0	97.30	97	75-125
Molybdenum	20.00	20.30	102	75-125
Nickel	25.00	24.94	100	75-125
Selenium	50.00	49.72	99	75-125
Silver	10.00	8.979	90	75-125
Thallium	50.00	49.23	98	75-125
Vanadium	25.00	25.25	101	75-125
Zinc	25.00	25.13	101	75-125

Type: BSD Lab ID: QC326336

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	102.6	103	75-125	3	30
Arsenic	50.00	51.87	104	75-125	4	30
Barium	100.0	105.0	105	75-125	2	30
Beryllium	2.500	2.614	105	75-125	1	30
Cadmium	10.00	10.63	106	75-125	3	30
Chromium	100.0	103.3	103	75-125	2	30
Cobalt	25.00	25.66	103	75-125	3	30
Copper	12.50	12.64	101	75-125	2	30
Lead	100.0	100.9	101	75-125	4	30
Molybdenum	20.00	21.07	105	75-125	4	30
Nickel	25.00	25.80	103	75-125	3	30
Selenium	50.00	51.48	103	75-125	3	30
Silver	10.00	9.249	92	75-125	3	30
Thallium	50.00	50.93	102	75-125	3	30
Vanadium	25.00	26.00	104	75-125	3	30
Zinc	25.00	26.14	105	75-125	4	30

RPD= Relative Percent Difference

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Batch QC Report

California Title 26 Metals

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3050B
Project#:	4089041001.109	Analysis:	EPA 6010B
Field ID:	207TP100(5.0)	Batch#:	110039
MSS Lab ID:	184508-001	Sampled:	01/23/06
Matrix:	Soil	Received:	01/24/06
Units:	mg/Kg	Prepared:	02/01/06
Basis:	dry	Analyzed:	02/01/06
Diln Fac:	1.000		

Type: MS Moisture: 21%
Lab ID: QC326337

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	0.7472	112.0	61.60	54 *	75-125
Arsenic	3.243	56.01	58.46	99	75-125
Barium	43.37	112.0	163.9	108	75-125
Beryllium	0.1558	2.800	2.949	100	75-125
Cadmium	0.2763	11.20	11.38	99	75-125
Chromium	78.71	112.0	194.8	104	75-125
Cobalt	8.487	28.00	35.01	95	75-125
Copper	14.95	14.00	27.93	93 P	75-125
Lead	47.10	112.0	163.1	104	75-125
Molybdenum	0.4350	22.40	21.99	96	75-125
Nickel	47.89	28.00	79.39	112 P	75-125
Selenium	0.1808	56.01	54.60	97	75-125
Silver	0.8145	11.20	12.02	100	75-125
Thallium	0.2139	56.01	52.30	93	75-125
Vanadium	42.66	28.00	72.48	107 P	75-125
Zinc	77.84	28.00	102.3	87 P	75-125

Type: MSD Moisture: 21%
Lab ID: QC326338

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	137.6	78.01	56 *	75-125	3	30
Arsenic	68.79	72.50	101	75-125	2	30
Barium	137.6	185.5	103	75-125	3	30
Beryllium	3.440	3.591	100	75-125	0	30
Cadmium	13.76	14.11	101	75-125	1	30
Chromium	137.6	243.1	119	75-125	10	30
Cobalt	34.40	42.33	98	75-125	3	30
Copper	17.20	32.54	102	75-125	5	30
Lead	137.6	189.7	104	75-125	0	30
Molybdenum	27.52	27.16	97	75-125	1	30
Nickel	34.40	100.9	154 * P	75-125	16	30
Selenium	68.79	68.21	99	75-125	2	30
Silver	13.76	13.06	89	75-125	11	30
Thallium	68.79	64.52	93	75-125	1	30
Vanadium	34.40	79.55	107 P	75-125	1	30
Zinc	34.40	116.6	113 P	75-125	7	30

*= Value outside of QC limits; see narrative
P= Sample concentration > spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184508	Location:	PT Presidio Bldg 231/207
Client:	Mactec, Inc.	Prep:	EPA 3050B
Project#:	4089041001.109	Analysis:	EPA 6010B
Field ID:	207TP100(5.0)	Basis:	dry
Type:	Serial Dilution	Diln Fac:	5.000
MSS Lab ID:	184508-001	Batch#:	110039
Lab ID:	QC326339	Sampled:	01/23/06
Matrix:	Soil	Received:	01/24/06
Units:	mg/Kg	Analyzed:	02/01/06

Moisture: 21%

Analyte	MSS Result	MSS RL	Result	RL	% Diff	Lim
Antimony	0.7472	4.040	ND	20.20		10
Arsenic	3.243	0.3367	3.206	1.683		10
Barium	43.37	0.6733	42.34	3.367	2	10
Beryllium	0.1558	0.1347	0.1266 J	0.6733		10
Cadmium	0.2763	0.3367	0.2674 J	1.683		10
Chromium	78.71	0.6733	75.82	3.367	4	10
Cobalt	8.487	1.347	8.375	6.733	1	10
Copper	14.95	0.6733	14.20	3.367	5	10
Lead	47.10	0.2020	46.86	1.010	1	10
Molybdenum	0.4350	1.347	0.5309 J	6.733		10
Nickel	47.89	1.347	47.18	6.733	1	10
Selenium	0.1808	0.3367	ND	1.683		10
Silver	0.8145	0.3367	0.4791 J	1.683		10
Thallium	0.2139	0.3367	0.7291 J	1.683		10
Vanadium	42.66	0.6733	40.35	3.367	5	10
Zinc	77.84	1.347	76.47	6.733	2	10

J= Estimated value
ND= Not Detected
RL= Reporting Limit

MACTEC

5341 Old Redwood Highway
Suite 300
Petaluma, CA 94954
(707) 793-3800

CHAIN OF CUSTODY FORM

Seq. No.: № 1462

Samplers: A H HENKE

Lab: CURTIS TOMPKINS

Job Number: 4089041001.107

Name/Location: PRESIDIO SF - BLDG 231/207

Project Manager: M A JACOBVITZ Recorder: _____ (Signature Required)

| MATRIX | | | # CONTAINERS & PRESERV. | | | | | | SAMPLE NUMBER | | DATE | | | | STATION DESCRIPTION | | ANALYSIS REQUESTED | | | | | |

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Number 184591

Mactec, Inc.
5341 Old Redwood Hwy
Petaluma, CA 94954

Project#: 4089041001.109
Location: PT Presidio SF 207/231

Sample ID	Lab ID
230TP100(4.0)	184591-001
DUP(012706)	184591-002
TB(012706)	184591-003

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Signature: _____ Date: 3/8/06
Operations Manager

Signature: _____ Date: 3/7/06
Project Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**184591**
Client:	**Mactec, Inc.**
Project:	**4089041001.109**
Location:	**PT Presidio SF 207/231**
Request Date:	**01/27/06**
Samples Received:	**01/27/06**

This hardcopy data package contains sample and QC results for two soil samples and one water sample, requested for the above referenced project on 01/27/06. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Water:
Gasoline C7-C12 was detected between the MDL and the RL in the method blank for batch 109922; this analyte was not detected in the sample at or above the RL. No other analytical problems were encountered.

TPH-Purgeables and/or BTXE by GC (EPA 8015B) Soil:
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Water:
High surrogate recoveries were observed for bromofluorobenzene in TB(012706) (lab # 184591-003) and the method blank for batch 110099. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B) Soil:
Methylene chloride was detected between the MDL and the RL in the method blank for batch 109966; this analyte was not detected in samples at or above the RL. Methylene chloride was detected above the RL in 230TP100(4.0) (lab # 184591-001); this analyte is a common laboratory contaminant. Methylene chloride was also detected between the MDL and the RL in DUP(012706) (lab # 184591-002). Due to insufficient sample volume, MS/MSD was not performed on sample 230TP100(4.0) as requested by the client on the COC. No other analytical problems were encountered.

Semivolatile Organics by GC/MS SIM (EPA 8270C-SIM):
Due to insufficient sample volume, MS/MSD was not performed on sample 230TP100(4.0)(C&T#184591-001) as requested by the client on the COC. MS/MSD was performed on sample DUP(012706) (C&T#184591-002). No analytical problems were encountered.

Pesticides (EPA 8081A):
High responses were observed for 4,4'-DDD and endrin ketone in the CCV analyzed 01/31/06 03:28; average CCV drift met method requirements, and these analytes were not detected at or above the RL in the associated samples. High response was observed for heptachlor in the CCV analyzed 01/30/06 22:34;

#
41.2

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**184591**
Client:	**Mactec, Inc.**
Project:	**4089041001.109**
Location:	**PT Presidio SF 207/231**
Request Date:	**01/27/06**
Samples Received:	**01/27/06**

Pesticides (EPA 8081A):
average CCV drift met method requirements. No other analytical problems were encountered.

Polychlorinated Biphenyls (PCBs) (EPA 8082):
Due to insufficient sample volume, MS/MSD was not performed on sample 230TP100(4.0)(C&T#184591-001) as requested by the client on the COC. MS/MSD was performed on sample DUP(012706) (C&T#184591-002). No analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A):
Low recovery was observed for mercury in the MSD for batch 109972; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPD was within limits. Low recoveries were observed for antimony in the MS/MSD of 207TP100(5.0) (lab # 184508-001); the BS/BSD were within limits, and the associated RPD was within limits. High recovery was observed for nickel in the MSD of 207TP100(5.0) (lab # 184508-001); the BS/BSD were within limits, and the associated RPD was within limits. Chromium, lead, and thallium were detected between the MDL and the RL in the method blank for batch 110039; these analytes were either not detected in samples at or above the RL, or detected at a level at least ten times that of the blank. No other analytical problems were encountered.

Moisture (ASTM D2216/CLP):
No analytical problems were encountered.

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Total Volatile Hydrocarbons

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8015B
Field ID:	TB(012706)	Batch#:	109922
Matrix:	Water	Sampled:	01/27/06
Units:	ug/L	Received:	01/27/06
Diln Fac:	1.000		

Type: SAMPLE Analyzed: 01/28/06
Lab ID: 184591-003

Analyte	Result	RL	MDL
Gasoline C7-C12	17 J	50	4.2

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	104	65-135

Type: BLANK Analyzed: 01/27/06
Lab ID: QC325846

Analyte	Result	RL	MDL
Gasoline C7-C12	14 J	50	4.2

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	99	65-135

J= Estimated value
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC325848	Batch#:	109922
Matrix:	Water	Analyzed:	01/27/06
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,973	99	75-125

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	109	65-135

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	109922
MSS Lab ID:	184575-001	Sampled:	01/26/06
Matrix:	Water	Received:	01/26/06
Units:	ug/L	Analyzed:	01/27/06
Diln Fac:	1.000		

Type: MS Lab ID: QC325849

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	13.71	2,000	2,097	104	65-135

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	109	65-135

Type: MSD Lab ID: QC325850

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,044	101	65-135	3	35

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	110	65-135

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Total Volatile Hydrocarbons

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	01/27/06
Units:	mg/Kg	Received:	01/27/06
Diln Fac:	1.000	Analyzed:	01/29/06
Batch#:	109940		

Field ID: 230TP100(4.0) Basis: dry
Type: SAMPLE Moisture: 13%
Lab ID: 184591-001

Analyte	Result	RL	MDL
Gasoline C7-C12	ND	1.1	0.15

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	99	65-135

Field ID: DUP(012706) Basis: dry
Type: SAMPLE Moisture: 14%
Lab ID: 184591-002

Analyte	Result	RL	MDL
Gasoline C7-C12	ND	1.3	0.17

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	104	65-135

Type: BLANK Basis: as received
Lab ID: QC325906

Analyte	Result	RL	MDL
Gasoline C7-C12	ND	1.0	0.14

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	100	65-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC325907	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109940
Units:	mg/Kg	Analyzed:	01/29/06

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	10.00	9.977	100	75-125

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	120	65-135

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Batch QC Report

Total Volatile Hydrocarbons

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8015B
Field ID:	230TP100(4.0)	Diln Fac:	1.000
MSS Lab ID:	184591-001	Batch#:	109940
Matrix:	Soil	Sampled:	01/27/06
Units:	mg/Kg	Received:	01/27/06
Basis:	as received	Analyzed:	01/30/06

Type: MS Lab ID: QC325915

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<0.1312	10.20	9.356	92	65-135

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	65-135

Type: MSD Lab ID: QC325916

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	9.709	8.937	92	65-135	0	35

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	65-135

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Total Extractable Hydrocarbons

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	SHAKER TABLE
Project#:	4089041001.109	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	01/27/06
Units:	mg/Kg	Received:	01/27/06
Diln Fac:	1.000	Prepared:	01/30/06
Batch#:	109974	Analyzed:	01/30/06

Field ID:	230TP100(4.0)	Basis:	dry
Type:	SAMPLE	Moisture:	13%
Lab ID:	184591-001	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL
Diesel C12-C24	ND	1.1	0.40
Fuel Oil C24-C36	ND	5.7	1.8

Surrogate	%REC	Limits
Hexacosane	92	65-135

Field ID:	DUP(012706)	Basis:	dry
Type:	SAMPLE	Moisture:	14%
Lab ID:	184591-002	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL
Diesel C12-C24	ND	1.2	0.36
Fuel Oil C24-C36	ND	5.8	1.8

Surrogate	%REC	Limits
Hexacosane	114	65-135

Type:	BLANK	Basis:	as received
Lab ID:	QC326047	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL
Diesel C12-C24	ND	1.0	0.35
Fuel Oil C24-C36	ND	5.0	1.5

Surrogate	%REC	Limits
Hexacosane	100	65-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	SHAKER TABLE
Project#:	4089041001.109	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC326048	Batch#:	109974
Matrix:	Soil	Prepared:	01/30/06
Units:	mg/Kg	Analyzed:	01/30/06
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C12-C24	50.11	58.34	116	65-135

Surrogate	%REC	Limits
Hexacosane	117	65-135

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	SHAKER TABLE
Project#:	4089041001.109	Analysis:	EPA 8015B
Field ID:	230TP100(4.0)	Batch#:	109974
MSS Lab ID:	184591-001	Sampled:	01/27/06
Matrix:	Soil	Received:	01/27/06
Units:	mg/Kg	Prepared:	01/30/06
Basis:	as received	Analyzed:	01/30/06
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC326049

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C12-C24	<0.3480	50.24	49.21	98	65-135

Surrogate	%REC	Limits
Hexacosane	99	65-135

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC326050

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C12-C24	49.60	39.22	79	65-135	21	35

Surrogate	%REC	Limits
Hexacosane	80	65-135

RPD= Relative Percent Difference

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Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Field ID:	TB(012706)	Batch#:	110099
Lab ID:	184591-003	Sampled:	01/27/06
Matrix:	Water	Received:	01/27/06
Units:	ug/L	Analyzed:	02/02/06
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Freon 12	ND	1.0	0.2
Chloromethane	ND	1.0	0.09
Vinyl Chloride	ND	0.5	0.2
Bromomethane	ND	1.0	0.2
Chloroethane	ND	1.0	0.1
Trichlorofluoromethane	ND	1.0	0.1
Acetone	ND	10	0.5
Freon 113	ND	0.5	0.09
1,1-Dichloroethene	ND	0.5	0.09
Methylene Chloride	ND	10	0.2
Carbon Disulfide	ND	0.5	0.04
MTBE	ND	0.5	0.05
trans-1,2-Dichloroethene	ND	0.5	0.09
Vinyl Acetate	ND	10	0.1
1,1-Dichloroethane	ND	0.5	0.06
2-Butanone	ND	10	0.3
cis-1,2-Dichloroethene	ND	0.5	0.1
2,2-Dichloropropane	ND	0.5	0.08
Chloroform	1.1	0.5	0.04
Bromochloromethane	ND	0.5	0.2
1,1,1-Trichloroethane	ND	0.5	0.04
1,1-Dichloropropene	ND	0.5	0.05
Carbon Tetrachloride	ND	0.5	0.06
1,2-Dichloroethane	ND	0.5	0.06
Benzene	ND	0.5	0.03
Trichloroethene	ND	0.5	0.09
1,2-Dichloropropane	ND	0.5	0.1
Bromodichloromethane	ND	0.5	0.07
Dibromomethane	ND	0.5	0.1
4-Methyl-2-Pentanone	ND	10	0.3
cis-1,3-Dichloropropene	ND	0.5	0.04
Toluene	ND	0.5	0.05
trans-1,3-Dichloropropene	ND	0.5	0.06
1,1,2-Trichloroethane	ND	0.5	0.06
2-Hexanone	ND	10	0.1
1,3-Dichloropropane	ND	0.5	0.07
Tetrachloroethene	ND	0.5	0.09
Dibromochloromethane	ND	0.5	0.06
1,2-Dibromoethane	ND	0.5	0.07
Chlorobenzene	ND	0.5	0.05
1,1,1,2-Tetrachloroethane	ND	0.5	0.09
Ethylbenzene	ND	0.5	0.1
m,p-Xylenes	ND	0.5	0.2
o-Xylene	ND	0.5	0.1
Styrene	ND	0.5	0.06
Bromoform	ND	1.0	0.1
Isopropylbenzene	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.06
1,2,3-Trichloropropane	ND	0.5	0.2
Propylbenzene	ND	0.5	0.1
Bromobenzene	ND	0.5	0.09
1,3,5-Trimethylbenzene	ND	0.5	0.1

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

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Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Field ID:	TB(012706)	Batch#:	110099
Lab ID:	184591-003	Sampled:	01/27/06
Matrix:	Water	Received:	01/27/06
Units:	ug/L	Analyzed:	02/02/06
Diln Fac:	1.000		

Analyte	Result	RL	MDL
2-Chlorotoluene	ND	0.5	0.1
4-Chlorotoluene	ND	0.5	0.07
tert-Butylbenzene	ND	0.5	0.08
1,2,4-Trimethylbenzene	ND	0.5	0.1
sec-Butylbenzene	ND	0.5	0.08
para-Isopropyl Toluene	ND	0.5	0.04
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.2
n-Butylbenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.06
1,2-Dibromo-3-Chloropropane	ND	2.0	0.1
1,2,4-Trichlorobenzene	ND	0.5	0.2
Hexachlorobutadiene	ND	0.5	0.2
Naphthalene	ND	2.0	0.2
1,2,3-Trichlorobenzene	ND	0.5	0.3

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	103	76-114
Toluene-d8	102	88-110
Bromofluorobenzene	116 *	86-115

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	110099
Units:	ug/L	Analyzed:	02/02/06
Diln Fac:	1.000		

Type: BS Lab ID: QC326578

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	25.74	103	65-135
Benzene	25.00	24.45	98	65-135
Trichloroethene	25.00	24.73	99	65-135
Toluene	25.00	23.98	96	65-135
Chlorobenzene	25.00	24.23	97	65-135

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	76-114
Toluene-d8	101	88-110
Bromofluorobenzene	107	86-115

Type: BSD Lab ID: QC326579

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	28.26	113	65-135	9	35
Benzene	25.00	26.66	107	65-135	9	35
Trichloroethene	25.00	27.30	109	65-135	10	35
Toluene	25.00	26.45	106	65-135	10	35
Chlorobenzene	25.00	26.47	106	65-135	9	35

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	76-114
Toluene-d8	103	88-110
Bromofluorobenzene	105	86-115

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Type:	BLANK	Dil'n Fac:	1.000
Lab ID:	QC326582	Batch#:	110099
Matrix:	Water	Analyzed:	02/02/06
Units:	ug/L		

Analyte	Result	RL	MDL
Freon 12	ND	1.0	0.2
Chloromethane	ND	1.0	0.09
Vinyl Chloride	ND	0.5	0.2
Bromomethane	ND	1.0	0.2
Chloroethane	ND	1.0	0.1
Trichlorofluoromethane	ND	1.0	0.1
Acetone	ND	10	0.5
Freon 113	ND	0.5	0.09
1,1-Dichloroethene	ND	0.5	0.09
Methylene Chloride	ND	10	0.2
Carbon Disulfide	ND	0.5	0.04
MTBE	ND	0.5	0.05
trans-1,2-Dichloroethene	ND	0.5	0.09
Vinyl Acetate	ND	10	0.1
1,1-Dichloroethane	ND	0.5	0.06
2-Butanone	ND	10	0.3
cis-1,2-Dichloroethene	ND	0.5	0.1
2,2-Dichloropropane	ND	0.5	0.08
Chloroform	ND	0.5	0.04
Bromochloromethane	ND	0.5	0.2
1,1,1-Trichloroethane	ND	0.5	0.04
1,1-Dichloropropene	ND	0.5	0.05
Carbon Tetrachloride	ND	0.5	0.06
1,2-Dichloroethane	ND	0.5	0.06
Benzene	ND	0.5	0.03
Trichloroethene	ND	0.5	0.09
1,2-Dichloropropane	ND	0.5	0.1
Bromodichloromethane	ND	0.5	0.07
Dibromomethane	ND	0.5	0.1
4-Methyl-2-Pentanone	ND	10	0.3
cis-1,3-Dichloropropene	ND	0.5	0.04
Toluene	ND	0.5	0.05
trans-1,3-Dichloropropene	ND	0.5	0.06
1,1,2-Trichloroethane	ND	0.5	0.06
2-Hexanone	ND	10	0.1
1,3-Dichloropropane	ND	0.5	0.07
Tetrachloroethene	ND	0.5	0.09
Dibromochloromethane	ND	0.5	0.06
1,2-Dibromoethane	ND	0.5	0.07
Chlorobenzene	ND	0.5	0.05
1,1,1,2-Tetrachloroethane	ND	0.5	0.09
Ethylbenzene	ND	0.5	0.1
m,p-Xylenes	ND	0.5	0.2
o-Xylene	ND	0.5	0.1
Styrene	ND	0.5	0.06
Bromoform	ND	1.0	0.1
Isopropylbenzene	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.06
1,2,3-Trichloropropane	ND	0.5	0.2
Propylbenzene	ND	0.5	0.1
Bromobenzene	ND	0.5	0.09
1,3,5-Trimethylbenzene	ND	0.5	0.1

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC326582	Batch#:	110099
Matrix:	Water	Analyzed:	02/02/06
Units:	ug/L		

Analyte	Result	RL	MDL
2-Chlorotoluene	ND	0.5	0.1
4-Chlorotoluene	ND	0.5	0.07
tert-Butylbenzene	ND	0.5	0.08
1,2,4-Trimethylbenzene	ND	0.5	0.1
sec-Butylbenzene	ND	0.5	0.08
para-Isopropyl Toluene	ND	0.5	0.04
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.2
n-Butylbenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.06
1,2-Dibromo-3-Chloropropane	ND	2.0	0.1
1,2,4-Trichlorobenzene	ND	0.5	0.2
Hexachlorobutadiene	ND	0.5	0.2
Naphthalene	ND	2.0	0.2
1,2,3-Trichlorobenzene	ND	0.5	0.3

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	76-114
Toluene-d8	102	88-110
Bromofluorobenzene	116 *	86-115

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Field ID:	230TP100(4.0)	Dil'n Fac:	0.9615
Lab ID:	184591-001	Batch#:	109966
Matrix:	Soil	Sampled:	01/27/06
Units:	ug/Kg	Received:	01/27/06
Basis:	dry	Analyzed:	01/30/06

Moisture: 13%

Analyte	Result	RL	MDL
Freon 12	ND	11	2.2
Chloromethane	ND	11	2.2
Vinyl Chloride	ND	11	1.7
Bromomethane	ND	11	1.8
Chloroethane	ND	11	2.0
Trichlorofluoromethane	ND	5.5	1.8
Acetone	ND	22	2.3
Freon 113	ND	5.5	1.9
1,1-Dichloroethene	ND	5.5	2.4
Methylene Chloride	22 J	22	2.4
Carbon Disulfide	ND	5.5	1.9
MTBE	ND	5.5	2.3
trans-1,2-Dichloroethene	ND	5.5	2.3
Vinyl Acetate	ND	55	2.1
1,1-Dichloroethane	ND	5.5	2.2
2-Butanone	ND	11	2.4
cis-1,2-Dichloroethene	ND	5.5	2.2
2,2-Dichloropropane	ND	5.5	2.2
Chloroform	ND	5.5	2.2
Bromochloromethane	ND	5.5	2.0
1,1,1-Trichloroethane	ND	5.5	2.2
1,1-Dichloropropene	ND	5.5	2.2
Carbon Tetrachloride	ND	5.5	2.0
1,2-Dichloroethane	ND	5.5	2.2
Benzene	ND	5.5	2.3
Trichloroethene	ND	5.5	2.2
1,2-Dichloropropane	ND	5.5	2.4
Bromodichloromethane	ND	5.5	2.1
Dibromomethane	ND	5.5	2.1
4-Methyl-2-Pentanone	ND	11	1.9
cis-1,3-Dichloropropene	ND	5.5	1.9
Toluene	ND	5.5	2.6
trans-1,3-Dichloropropene	ND	5.5	2.2
1,1,2-Trichloroethane	ND	5.5	2.8
2-Hexanone	ND	11	2.2
1,3-Dichloropropane	ND	5.5	2.1
Tetrachloroethene	ND	5.5	2.0
Dibromochloromethane	ND	5.5	1.6
1,2-Dibromoethane	ND	5.5	2.2
Chlorobenzene	ND	5.5	2.3
1,1,1,2-Tetrachloroethane	ND	5.5	1.9
Ethylbenzene	ND	5.5	2.2
m,p-Xylenes	ND	5.5	4.8
o-Xylene	ND	5.5	2.3
Styrene	ND	5.5	2.0
Bromoform	ND	5.5	1.8
Isopropylbenzene	ND	5.5	2.2
1,1,2,2-Tetrachloroethane	ND	5.5	2.3
1,2,3-Trichloropropane	ND	5.5	2.8
Propylbenzene	ND	5.5	2.3

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Field ID:	230TP100(4.0)	Dil'n Fac:	0.9615
Lab ID:	184591-001	Batch#:	109966
Matrix:	Soil	Sampled:	01/27/06
Units:	ug/Kg	Received:	01/27/06
Basis:	dry	Analyzed:	01/30/06

Analyte	Result	RL	MDL
Bromobenzene	ND	5.5	2.1
1,3,5-Trimethylbenzene	ND	5.5	2.3
2-Chlorotoluene	ND	5.5	2.3
4-Chlorotoluene	ND	5.5	2.0
tert-Butylbenzene	ND	5.5	2.3
1,2,4-Trimethylbenzene	ND	5.5	2.2
sec-Butylbenzene	ND	5.5	2.3
para-Isopropyl Toluene	ND	5.5	2.2
1,3-Dichlorobenzene	ND	5.5	2.1
1,4-Dichlorobenzene	ND	5.5	2.1
n-Butylbenzene	ND	5.5	1.9
1,2-Dichlorobenzene	ND	5.5	2.1
1,2-Dibromo-3-Chloropropane	ND	5.5	2.5
1,2,4-Trichlorobenzene	ND	5.5	1.8
Hexachlorobutadiene	ND	5.5	2.2
Naphthalene	ND	5.5	1.8
1,2,3-Trichlorobenzene	ND	5.5	1.9

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	70-121
Toluene-d8	95	84-138
Bromofluorobenzene	96	59-113

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Field ID:	DUP(012706)	Dil'n Fac:	0.9434
Lab ID:	184591-002	Batch#:	109966
Matrix:	Soil	Sampled:	01/27/06
Units:	ug/Kg	Received:	01/27/06
Basis:	dry	Analyzed:	01/30/06

Moisture: 14%

Analyte	Result	RL	MDL
Freon 12	ND	11	2.2
Chloromethane	ND	11	2.2
Vinyl Chloride	ND	11	1.7
Bromomethane	ND	11	1.8
Chloroethane	ND	11	2.0
Trichlorofluoromethane	ND	5.5	1.8
Acetone	ND	22	2.3
Freon 113	ND	5.5	1.9
1,1-Dichloroethene	ND	5.5	2.4
Methylene Chloride	19 J	22	2.4
Carbon Disulfide	ND	5.5	1.9
MTBE	ND	5.5	2.2
trans-1,2-Dichloroethene	ND	5.5	2.3
Vinyl Acetate	ND	55	2.1
1,1-Dichloroethane	ND	5.5	2.2
2-Butanone	ND	11	2.3
cis-1,2-Dichloroethene	ND	5.5	2.2
2,2-Dichloropropane	ND	5.5	2.2
Chloroform	ND	5.5	2.2
Bromochloromethane	ND	5.5	2.0
1,1,1-Trichloroethane	ND	5.5	2.2
1,1-Dichloropropene	ND	5.5	2.2
Carbon Tetrachloride	ND	5.5	1.9
1,2-Dichloroethane	ND	5.5	2.2
Benzene	ND	5.5	2.3
Trichloroethene	ND	5.5	2.2
1,2-Dichloropropane	ND	5.5	2.4
Bromodichloromethane	ND	5.5	2.0
Dibromomethane	ND	5.5	2.1
4-Methyl-2-Pentanone	ND	11	1.9
cis-1,3-Dichloropropene	ND	5.5	1.9
Toluene	ND	5.5	2.6
trans-1,3-Dichloropropene	ND	5.5	2.2
1,1,2-Trichloroethane	ND	5.5	2.8
2-Hexanone	ND	11	2.1
1,3-Dichloropropane	ND	5.5	2.1
Tetrachloroethene	ND	5.5	2.0
Dibromochloromethane	ND	5.5	1.6
1,2-Dibromoethane	ND	5.5	2.1
Chlorobenzene	ND	5.5	2.2
1,1,1,2-Tetrachloroethane	ND	5.5	1.9
Ethylbenzene	ND	5.5	2.2
m,p-Xylenes	ND	5.5	4.8
o-Xylene	ND	5.5	2.3
Styrene	ND	5.5	2.0
Bromoform	ND	5.5	1.8
Isopropylbenzene	ND	5.5	2.2
1,1,2,2-Tetrachloroethane	ND	5.5	2.3
1,2,3-Trichloropropane	ND	5.5	2.8
Propylbenzene	ND	5.5	2.3

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Field ID:	DUP(012706)	Dil'n Fac:	0.9434
Lab ID:	184591-002	Batch#:	109966
Matrix:	Soil	Sampled:	01/27/06
Units:	ug/Kg	Received:	01/27/06
Basis:	dry	Analyzed:	01/30/06

Analyte	Result	RL	MDL
Bromobenzene	ND	5.5	2.1
1,3,5-Trimethylbenzene	ND	5.5	2.3
2-Chlorotoluene	ND	5.5	2.3
4-Chlorotoluene	ND	5.5	2.0
tert-Butylbenzene	ND	5.5	2.3
1,2,4-Trimethylbenzene	ND	5.5	2.2
sec-Butylbenzene	ND	5.5	2.3
para-Isopropyl Toluene	ND	5.5	2.2
1,3-Dichlorobenzene	ND	5.5	2.1
1,4-Dichlorobenzene	ND	5.5	2.1
n-Butylbenzene	ND	5.5	1.9
1,2-Dichlorobenzene	ND	5.5	2.1
1,2-Dibromo-3-Chloropropane	ND	5.5	2.5
1,2,4-Trichlorobenzene	ND	5.5	1.8
Hexachlorobutadiene	ND	5.5	2.2
Naphthalene	ND	5.5	1.8
1,2,3-Trichlorobenzene	ND	5.5	1.9

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	94	70-121
Toluene-d8	94	84-138
Bromofluorobenzene	98	59-113

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC326019	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109966
Units:	ug/Kg	Analyzed:	01/30/06

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	58.40	117	65-135
Benzene	50.00	54.54	109	65-135
Trichloroethene	50.00	54.90	110	65-135
Toluene	50.00	54.24	108	65-135
Chlorobenzene	50.00	56.62	113	65-135

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	89	70-121
Toluene-d8	97	84-138
Bromofluorobenzene	97	59-113

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC326020	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109966
Units:	ug/Kg	Analyzed:	01/30/06

Analyte	Result	RL	MDL
Freon 12	ND	10	2.0
Chloromethane	ND	10	2.0
Vinyl Chloride	ND	10	1.6
Bromomethane	ND	10	1.6
Chloroethane	ND	10	1.8
Trichlorofluoromethane	ND	5.0	1.6
Acetone	ND	20	2.1
Freon 113	ND	5.0	1.7
1,1-Dichloroethene	ND	5.0	2.2
Methylene Chloride	4.7 J	20	2.2
Carbon Disulfide	ND	5.0	1.7
MTBE	ND	5.0	2.0
trans-1,2-Dichloroethene	ND	5.0	2.1
Vinyl Acetate	ND	50	1.9
1,1-Dichloroethane	ND	5.0	2.0
2-Butanone	ND	10	2.1
cis-1,2-Dichloroethene	ND	5.0	2.0
2,2-Dichloropropane	ND	5.0	2.0
Chloroform	ND	5.0	2.0
Bromochloromethane	ND	5.0	1.8
1,1,1-Trichloroethane	ND	5.0	2.0
1,1-Dichloropropene	ND	5.0	2.0
Carbon Tetrachloride	ND	5.0	1.8
1,2-Dichloroethane	ND	5.0	2.0
Benzene	ND	5.0	2.1
Trichloroethene	ND	5.0	2.0
1,2-Dichloropropane	ND	5.0	2.2
Bromodichloromethane	ND	5.0	1.9
Dibromomethane	ND	5.0	1.9
4-Methyl-2-Pentanone	ND	10	1.7
cis-1,3-Dichloropropene	ND	5.0	1.7
Toluene	ND	5.0	2.3
trans-1,3-Dichloropropene	ND	5.0	2.0
1,1,2-Trichloroethane	ND	5.0	2.5
2-Hexanone	ND	10	2.0
1,3-Dichloropropane	ND	5.0	1.9
Tetrachloroethene	ND	5.0	1.8
Dibromochloromethane	ND	5.0	1.5
1,2-Dibromoethane	ND	5.0	1.9
Chlorobenzene	ND	5.0	2.0
1,1,1,2-Tetrachloroethane	ND	5.0	1.7
Ethylbenzene	ND	5.0	2.0
m,p-Xylenes	ND	5.0	4.4
o-Xylene	ND	5.0	2.1
Styrene	ND	5.0	1.8
Bromoform	ND	5.0	1.6
Isopropylbenzene	ND	5.0	2.0
1,1,2,2-Tetrachloroethane	ND	5.0	2.1
1,2,3-Trichloropropane	ND	5.0	2.5
Propylbenzene	ND	5.0	2.1
Bromobenzene	ND	5.0	1.9
1,3,5-Trimethylbenzene	ND	5.0	2.1

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 5030B
Project#:	4089041001.109	Analysis:	EPA 8260B
Type:	BLANK	Basis:	as received
Lab ID:	QC326020	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109966
Units:	ug/Kg	Analyzed:	01/30/06

Analyte	Result	RL	MDL
2-Chlorotoluene	ND	5.0	2.1
4-Chlorotoluene	ND	5.0	1.8
tert-Butylbenzene	ND	5.0	2.1
1,2,4-Trimethylbenzene	ND	5.0	2.0
sec-Butylbenzene	ND	5.0	2.1
para-Isopropyl Toluene	ND	5.0	2.0
1,3-Dichlorobenzene	ND	5.0	1.9
1,4-Dichlorobenzene	ND	5.0	1.9
n-Butylbenzene	ND	5.0	1.7
1,2-Dichlorobenzene	ND	5.0	1.9
1,2-Dibromo-3-Chloropropane	ND	5.0	2.2
1,2,4-Trichlorobenzene	ND	5.0	1.6
Hexachlorobutadiene	ND	5.0	2.0
Naphthalene	ND	5.0	1.7
1,2,3-Trichlorobenzene	ND	5.0	1.7

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	92	70-121
Toluene-d8	97	84-138
Bromofluorobenzene	99	59-113

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Semivolatile Organics by GC/MS SIM

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8270C-SIM
Field ID:	230TP100(4.0)	Batch#:	109942
Lab ID:	184591-001	Sampled:	01/27/06
Matrix:	Soil	Received:	01/27/06
Units:	ug/Kg	Prepared:	01/29/06
Basis:	dry	Analyzed:	01/30/06
Diln Fac:	1.000		

Moisture: 13%

Analyte	Result	RL	MDL
Naphthalene	ND	5.8	0.89
Acenaphthylene	ND	5.8	1.7
Acenaphthene	ND	5.8	0.89
Fluorene	ND	5.8	1.3
Phenanthrene	ND	5.8	1.1
Anthracene	ND	5.8	1.4
Fluoranthene	ND	5.8	1.6
Pyrene	ND	5.8	1.3
Benzo(a)anthracene	ND	5.8	1.2
Chrysene	ND	5.8	1.1
Benzo(b)fluoranthene	ND	5.8	1.3
Benzo(k)fluoranthene	ND	5.8	0.69
Benzo(a)pyrene	ND	5.8	1.0
Indeno(1,2,3-cd)pyrene	ND	5.8	1.1
Dibenz(a,h)anthracene	ND	5.8	1.0
Benzo(g,h,i)perylene	ND	5.8	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	84	33-151
2-Fluorobiphenyl	72	34-126
Terphenyl-d14	85	42-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Semivolatile Organics by GC/MS SIM

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8270C-SIM
Field ID:	DUP(012706)	Batch#:	109942
Lab ID:	184591-002	Sampled:	01/27/06
Matrix:	Soil	Received:	01/27/06
Units:	ug/Kg	Prepared:	01/29/06
Basis:	dry	Analyzed:	01/30/06
Diln Fac:	1.000		

Moisture: 14%

Analyte	Result	RL	MDL
Naphthalene	ND	5.8	0.89
Acenaphthylene	ND	5.8	1.7
Acenaphthene	ND	5.8	0.89
Fluorene	ND	5.8	1.3
Phenanthrene	ND	5.8	1.1
Anthracene	ND	5.8	1.4
Fluoranthene	ND	5.8	1.6
Pyrene	ND	5.8	1.3
Benzo(a)anthracene	ND	5.8	1.2
Chrysene	ND	5.8	1.1
Benzo(b)fluoranthene	ND	5.8	1.2
Benzo(k)fluoranthene	ND	5.8	0.69
Benzo(a)pyrene	ND	5.8	1.0
Indeno(1,2,3-cd)pyrene	ND	5.8	1.1
Dibenz(a,h)anthracene	ND	5.8	1.0
Benzo(g,h,i)perylene	ND	5.8	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	72	33-151
2-Fluorobiphenyl	67	34-126
Terphenyl-d14	75	42-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8270C-SIM
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC325917	Batch#:	109942
Matrix:	Soil	Prepared:	01/29/06
Units:	ug/Kg	Analyzed:	01/30/06
Basis:	as received		

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	0.76
Acenaphthylene	ND	5.0	1.5
Acenaphthene	ND	5.0	0.76
Fluorene	ND	5.0	1.1
Phenanthrene	ND	5.0	0.94
Anthracene	ND	5.0	1.2
Fluoranthene	ND	5.0	1.3
Pyrene	ND	5.0	1.1
Benzo(a)anthracene	ND	5.0	1.0
Chrysene	ND	5.0	0.96
Benzo(b)fluoranthene	ND	5.0	1.1
Benzo(k)fluoranthene	ND	5.0	0.59
Benzo(a)pyrene	ND	5.0	0.89
Indeno(1,2,3-cd)pyrene	ND	5.0	0.96
Dibenz(a,h)anthracene	ND	5.0	0.88
Benzo(g,h,i)perylene	ND	5.0	0.87

Surrogate	%REC	Limits
Nitrobenzene-d5	77	33-151
2-Fluorobiphenyl	74	34-126
Terphenyl-d14	66	42-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8270C-SIM
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC325918	Batch#:	109942
Matrix:	Soil	Prepared:	01/29/06
Units:	ug/Kg	Analyzed:	01/30/06
Basis:	as received		

Analyte	Spiked	Result	%REC	Limits
Acenaphthene	32.98	22.68	69	49-120
Pyrene	32.98	20.53	62	48-120

Surrogate	%REC	Limits
Nitrobenzene-d5	88	33-151
2-Fluorobiphenyl	74	34-126
Terphenyl-d14	68	42-135

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8270C-SIM
Field ID:	DUP(012706)	Batch#:	109942
MSS Lab ID:	184591-002	Sampled:	01/27/06
Matrix:	Soil	Received:	01/27/06
Units:	ug/Kg	Prepared:	01/29/06
Basis:	as received	Analyzed:	01/30/06
Diln Fac:	1.000		

Type: MS Lab ID: QC325919

Analyte	MSS Result	Spiked	Result	%REC	Limits
Acenaphthene	<0.7633	33.49	24.00	72	52-125
Pyrene	<1.130	33.49	23.59	70	39-135

Surrogate	%REC	Limits
Nitrobenzene-d5	87	33-151
2-Fluorobiphenyl	77	34-126
Terphenyl-d14	77	42-135

Type: MSD Lab ID: QC325920

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Acenaphthene	33.75	24.55	73	52-125	1	35
Pyrene	33.75	24.36	72	39-135	2	44

Surrogate	%REC	Limits
Nitrobenzene-d5	88	33-151
2-Fluorobiphenyl	79	34-126
Terphenyl-d14	77	42-135

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Organochlorine Pesticides

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8081A
Field ID:	230TP100(4.0)	Batch#:	109929
Lab ID:	184591-001	Sampled:	01/27/06
Matrix:	Soil	Received:	01/27/06
Units:	ug/Kg	Prepared:	01/28/06
Basis:	dry	Analyzed:	01/31/06
Diln Fac:	1.000		

Moisture: 13%

Cleanup Method: EPA 3620

Analyte	Result	RL	MDL
alpha-BHC	ND	1.9	0.77
beta-BHC	ND	1.9	0.46
gamma-BHC	ND	1.9	0.49
delta-BHC	ND	1.9	0.40
Heptachlor	ND	1.9	0.49
Aldrin	ND	1.9	0.51
Heptachlor epoxide	ND	1.9	0.55
Endosulfan I	ND	1.9	0.79
Dieldrin	ND	3.8	1.1
4,4'-DDE	ND	3.8	1.1
Endrin	ND	3.8	1.0
Endosulfan II	ND	3.8	1.2
Endosulfan sulfate	ND	3.8	0.96
4,4'-DDD	ND	3.8	1.0
Endrin ketone	ND	3.8	0.98
Endrin aldehyde	ND	3.8	1.0
4,4'-DDT	ND	3.8	0.88
alpha-Chlordane	ND	1.9	0.56
gamma-Chlordane	ND	1.9	0.54
Methoxychlor	ND	19	4.8
Toxaphene	ND	68	13

Surrogate	%REC	Limits
TCMX	98	65-135
Decachlorobiphenyl	91	65-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Organochlorine Pesticides

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8081A
Field ID:	DUP(012706)	Batch#:	109929
Lab ID:	184591-002	Sampled:	01/27/06
Matrix:	Soil	Received:	01/27/06
Units:	ug/Kg	Prepared:	01/28/06
Basis:	dry	Analyzed:	01/31/06
Diln Fac:	1.000		

Moisture: 14%

Cleanup Method: EPA 3620

Analyte	Result	RL	MDL
alpha-BHC	ND	2.0	0.78
beta-BHC	ND	2.0	0.46
gamma-BHC	ND	2.0	0.49
delta-BHC	ND	2.0	0.40
Heptachlor	ND	2.0	0.50
Aldrin	ND	2.0	0.52
Heptachlor epoxide	ND	2.0	0.56
Endosulfan I	ND	2.0	0.80
Dieldrin	ND	3.8	1.1
4,4'-DDE	ND	3.8	1.1
Endrin	ND	3.8	1.0
Endosulfan II	ND	3.8	1.3
Endosulfan sulfate	ND	3.8	0.97
4,4'-DDD	ND	3.8	1.1
Endrin ketone	ND	3.8	0.99
Endrin aldehyde	ND	3.8	1.0
4,4'-DDT	ND	3.8	0.90
alpha-Chlordane	ND	2.0	0.57
gamma-Chlordane	ND	2.0	0.55
Methoxychlor	ND	20	4.9
Toxaphene	ND	69	13

Surrogate	%REC	Limits
TCMX	104	65-135
Decachlorobiphenyl	117	65-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Organochlorine Pesticides

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC325872	Batch#:	109929
Matrix:	Soil	Prepared:	01/28/06
Units:	ug/Kg	Analyzed:	01/30/06
Basis:	as received		

Cleanup Method: EPA 3620

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.67
beta-BHC	ND	1.7	0.40
gamma-BHC	ND	1.7	0.42
delta-BHC	ND	1.7	0.35
Heptachlor	ND	1.7	0.43
Aldrin	ND	1.7	0.44
Heptachlor epoxide	ND	1.7	0.48
Endosulfan I	ND	1.7	0.69
Dieldrin	ND	3.3	0.98
4,4'-DDE	ND	3.3	0.97
Endrin	ND	3.3	0.90
Endosulfan II	ND	3.3	1.1
Endosulfan sulfate	ND	3.3	0.83
4,4'-DDD	ND	3.3	0.90
Endrin ketone	ND	3.3	0.85
Endrin aldehyde	ND	3.3	0.87
4,4'-DDT	ND	3.3	0.77
alpha-Chlordane	ND	1.7	0.49
gamma-Chlordane	ND	1.7	0.47
Methoxychlor	ND	17	4.2
Toxaphene	ND	60	12

Surrogate	%REC	Limits
TCMX	99	65-135
Decachlorobiphenyl	105	65-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Organochlorine Pesticides

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC325873	Batch#:	109929
Matrix:	Soil	Prepared:	01/28/06
Units:	ug/Kg	Analyzed:	01/30/06
Basis:	as received		

Cleanup Method: EPA 3620

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.31	11.49	86	65-135
Heptachlor	13.31	12.81 #	96	65-135
Aldrin	13.31	12.18	91	65-135
Dieldrin	26.62	26.27	99	65-135
Endrin	26.62	28.80	108	65-135
4,4'-DDT	26.62	29.40	110	65-135

Surrogate	%REC	Limits
TCMX	96	65-135
Decachlorobiphenyl	121	65-135

#= CCV drift outside limits; average CCV drift within limits per method requirements

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Organochlorine Pesticides

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8081A
Field ID:	230TP100(4.0)	Batch#:	109929
MSS Lab ID:	184591-001	Sampled:	01/27/06
Matrix:	Soil	Received:	01/27/06
Units:	ug/Kg	Prepared:	01/28/06
Basis:	as received	Analyzed:	01/31/06
Diln Fac:	1.000		

Type: MS Cleanup Method: EPA 3620
Lab ID: QC325874

Analyte	MSS Result	Spiked	Result	%REC	Limits
gamma-BHC	<0.4222	13.49	10.73	80	65-135
Heptachlor	<0.4247	13.49	11.59	86	65-135
Aldrin	<0.4443	13.49	11.23	83	65-135
Dieldrin	<0.9831	26.97	24.18	90	65-135
Endrin	<0.8973	26.97	24.54	91	65-135
4,4'-DDT	<0.7687	26.97	21.45	80	65-135

Surrogate	%REC	Limits
TCMX	88	65-135
Decachlorobiphenyl	105	65-135

Type: MSD Cleanup Method: EPA 3620
Lab ID: QC325875

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	13.29	12.86	97	65-135	20	35
Heptachlor	13.29	13.38	101	65-135	16	35
Aldrin	13.29	12.97	98	65-135	16	35
Dieldrin	26.58	26.02	98	65-135	9	35
Endrin	26.58	25.21	95	65-135	4	35
4,4'-DDT	26.58	22.33	84	65-135	6	35

Surrogate	%REC	Limits
TCMX	114	65-135
Decachlorobiphenyl	104	65-135

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Polychlorinated Biphenyls (PCBs)

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/27/06
Units:	ug/Kg	Received:	01/27/06
Diln Fac:	1.000	Prepared:	01/30/06
Batch#:	109956		

Field ID:	230TP100(4.0)	Moisture:	13%
Type:	SAMPLE	Analyzed:	01/31/06
Lab ID:	184591-001	Cleanup Method:	EPA 3665A
Basis:	dry		

Analyte	Result	RL	MDL
Aroclor-1016	ND	14	2.2
Aroclor-1221	ND	28	9.2
Aroclor-1232	ND	14	2.3
Aroclor-1242	ND	14	2.0
Aroclor-1248	ND	14	2.9
Aroclor-1254	ND	14	3.0
Aroclor-1260	ND	14	2.2

Surrogate	%REC	Limits
TCMX	100	65-135
Decachlorobiphenyl	106	65-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Polychlorinated Biphenyls (PCBs)

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	01/27/06
Units:	ug/Kg	Received:	01/27/06
Diln Fac:	1.000	Prepared:	01/30/06
Batch#:	109956		

Field ID:	DUP(012706)	Moisture:	14%
Type:	SAMPLE	Analyzed:	01/31/06
Lab ID:	184591-002	Cleanup Method:	EPA 3665A
Basis:	dry		

Analyte	Result	RL	MDL
Aroclor-1016	ND	14	2.2
Aroclor-1221	ND	28	9.1
Aroclor-1232	ND	14	2.3
Aroclor-1242	ND	14	2.0
Aroclor-1248	ND	14	2.9
Aroclor-1254	ND	14	3.0
Aroclor-1260	ND	14	2.2

Surrogate	%REC	Limits
TCMX	100	65-135
Decachlorobiphenyl	121	65-135

Type:	BLANK	Analyzed:	01/30/06
Lab ID:	QC325982	Cleanup Method:	EPA 3665A
Basis:	as received		

Analyte	Result	RL	MDL
Aroclor-1016	ND	12	1.9
Aroclor-1221	ND	24	7.9
Aroclor-1232	ND	12	2.0
Aroclor-1242	ND	12	1.7
Aroclor-1248	ND	12	2.5
Aroclor-1254	ND	12	2.6
Aroclor-1260	ND	12	1.9

Surrogate	%REC	Limits
TCMX	105	65-135
Decachlorobiphenyl	108	65-135

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC325983	Batch#:	109956
Matrix:	Soil	Prepared:	01/30/06
Units:	ug/Kg	Analyzed:	01/30/06
Basis:	as received		

Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits
Aroclor-1221	338.0	408.2	121	65-135

Surrogate	%REC	Limits
TCMX	101	65-135
Decachlorobiphenyl	117	65-135

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Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3550B
Project#:	4089041001.109	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	109956
MSS Lab ID:	184590-003	Sampled:	01/23/06
Matrix:	Soil	Received:	01/23/06
Units:	ug/Kg	Prepared:	01/30/06
Basis:	dry	Analyzed:	01/30/06
Diln Fac:	1.000		

Type: MS
Lab ID: QC325984
Moisture: 12%
Cleanup Method: EPA 3665A

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1221	<9.121	381.5	434.9	114	65-135

Surrogate	%REC	Limits
TCMX	91	65-135
Decachlorobiphenyl	91	65-135

Type: MSD
Lab ID: QC325985
Moisture: 12%
Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1221	375.0	416.7	111	65-135	3	35

Surrogate	%REC	Limits
TCMX	90	65-135
Decachlorobiphenyl	114	65-135

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

California Title 26 Metals

Lab #:	184591	Project#:	4089041001.109
Client:	Mactec, Inc.	Location:	Presidio SF 207/231
Field ID:	230TP100(4.0)	Basis:	dry
Lab ID:	184591-001	Diln Fac:	1.000
Matrix:	Soil	Sampled:	01/27/06
Units:	mg/Kg	Received:	01/27/06

Moisture: 13%

Analyte	Result	RL	MDL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	0.22 J	3.3	0.12	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Arsenic	4.2	0.27	0.11	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Barium	110	0.55	0.056	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Beryllium	0.37	0.11	0.011	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Cadmium	0.20 J	0.27	0.025	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Chromium	79	0.55	0.037	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Cobalt	13	1.1	0.028	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Copper	13	0.55	0.052	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Lead	4.5	0.16	0.058	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Mercury	0.019 J	0.020	0.0039	109972	01/30/06	01/30/06	METHOD	EPA 7471A
Molybdenum	0.47 J	1.1	0.024	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Nickel	49	1.1	0.033	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Selenium	0.22 J	0.27	0.085	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Silver	ND	0.27	0.047	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Thallium	ND	0.27	0.033	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Vanadium	68	0.55	0.035	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Zinc	35	1.1	0.12	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

California Title 26 Metals

Lab #:	184591	Project#:	4089041001.109
Client:	Mactec, Inc.	Location:	Presidio SF 207/231
Field ID:	DUP(012706)	Basis:	dry
Lab ID:	184591-002	Diln Fac:	1.000
Matrix:	Soil	Sampled:	01/27/06
Units:	mg/Kg	Received:	01/27/06

Moisture: 14%

Analyte	Result	RL	MDL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	0.34 J	3.5	0.12	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Arsenic	4.1	0.29	0.12	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Barium	98	0.58	0.059	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Beryllium	0.35	0.12	0.012	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Cadmium	0.15 J	0.29	0.027	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Chromium	67	0.58	0.039	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Cobalt	14	1.2	0.030	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Copper	12	0.58	0.055	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Lead	4.4	0.17	0.061	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Mercury	0.052	0.022	0.0043	109972	01/30/06	01/30/06	METHOD	EPA 7471A
Molybdenum	0.43 J	1.2	0.026	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Nickel	42	1.2	0.035	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Selenium	ND	0.29	0.090	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Silver	ND	0.29	0.050	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Thallium	0.24 J	0.29	0.035	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Vanadium	62	0.58	0.037	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B
Zinc	31	1.2	0.12	110039	02/01/06	02/01/06	EPA 3050B	EPA 6010B

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	METHOD
Project#:	4089041001.109	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC326036	Batch#:	109972
Matrix:	Soil	Prepared:	01/30/06
Units:	mg/Kg	Analyzed:	01/30/06

Result	RL	MDL
ND	0.020	0.0038

ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	METHOD
Project#:	4089041001.109	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	109972
Units:	mg/Kg	Prepared:	01/30/06
Basis:	as received	Analyzed:	01/30/06

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC326037	0.5000	0.5200	104	75-125		
BSD	QC326038	0.5000	0.4880	98	75-125	6	35

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	METHOD
Project#:	4089041001.109	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	109972
MSS Lab ID:	184534-001	Sampled:	01/24/06
Matrix:	Soil	Received:	01/25/06
Units:	mg/Kg	Prepared:	01/30/06
Basis:	as received	Analyzed:	01/30/06

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC326039	0.3787	0.4808	0.8673	102	75-125		
MSD	QC326040		0.4545	0.6900	68 *	75-125	20	35

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	METHOD
Project#:	4089041001.109	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Field ID:	ZZZZZZZZZZ	Diln Fac:	5.000
Type:	Serial Dilution	Batch#:	109972
MSS Lab ID:	184534-001	Sampled:	01/24/06
Lab ID:	QC326041	Received:	01/25/06
Matrix:	Soil	Analyzed:	01/30/06
Units:	mg/Kg		

MSS Result	MSS RL	Result	RL	% Diff	Lim
0.3787	0.01852	0.4028	0.09259	6	10

RL= Reporting Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3050B
Project#:	4089041001.109	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC326334	Batch#:	110039
Matrix:	Soil	Prepared:	02/01/06
Units:	mg/Kg	Analyzed:	02/01/06
Basis:	as received		

Analyte	Result	RL	MDL
Antimony	ND	3.0	0.11
Arsenic	ND	0.25	0.099
Barium	ND	0.50	0.051
Beryllium	ND	0.10	0.0099
Cadmium	ND	0.25	0.023
Chromium	0.054 J	0.50	0.034
Cobalt	ND	1.0	0.025
Copper	ND	0.50	0.047
Lead	0.054 J	0.15	0.053
Molybdenum	ND	1.0	0.022
Nickel	ND	1.0	0.030
Selenium	ND	0.25	0.078
Silver	ND	0.25	0.043
Thallium	0.036 J	0.25	0.031
Vanadium	ND	0.50	0.032
Zinc	ND	1.0	0.11

J= Estimated value
ND= Not Detected
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3050B
Project#:	4089041001.109	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	110039
Units:	mg/Kg	Prepared:	02/01/06
Basis:	as received	Analyzed:	02/01/06
Diln Fac:	1.000		

Type: BS Lab ID: QC326335

Analyte	Spiked	Result	%REC	Limits
Antimony	100.0	99.13	99	75-125
Arsenic	50.00	50.01	100	75-125
Barium	100.0	102.5	102	75-125
Beryllium	2.500	2.580	103	75-125
Cadmium	10.00	10.28	103	75-125
Chromium	100.0	101.5	102	75-125
Cobalt	25.00	24.80	99	75-125
Copper	12.50	12.38	99	75-125
Lead	100.0	97.30	97	75-125
Molybdenum	20.00	20.30	102	75-125
Nickel	25.00	24.94	100	75-125
Selenium	50.00	49.72	99	75-125
Silver	10.00	8.979	90	75-125
Thallium	50.00	49.23	98	75-125
Vanadium	25.00	25.25	101	75-125
Zinc	25.00	25.13	101	75-125

Type: BSD Lab ID: QC326336

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	100.0	102.6	103	75-125	3	30
Arsenic	50.00	51.87	104	75-125	4	30
Barium	100.0	105.0	105	75-125	2	30
Beryllium	2.500	2.614	105	75-125	1	30
Cadmium	10.00	10.63	106	75-125	3	30
Chromium	100.0	103.3	103	75-125	2	30
Cobalt	25.00	25.66	103	75-125	3	30
Copper	12.50	12.64	101	75-125	2	30
Lead	100.0	100.9	101	75-125	4	30
Molybdenum	20.00	21.07	105	75-125	4	30
Nickel	25.00	25.80	103	75-125	3	30
Selenium	50.00	51.48	103	75-125	3	30
Silver	10.00	9.249	92	75-125	3	30
Thallium	50.00	50.93	102	75-125	3	30
Vanadium	25.00	26.00	104	75-125	3	30
Zinc	25.00	26.14	105	75-125	4	30

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3050B
Project#:	4089041001.109	Analysis:	EPA 6010B
Field ID:	207TP100(5.0)	Batch#:	110039
MSS Lab ID:	184508-001	Sampled:	01/23/06
Matrix:	Soil	Received:	01/24/06
Units:	mg/Kg	Prepared:	02/01/06
Basis:	dry	Analyzed:	02/01/06
Diln Fac:	1.000		

Type: MS Moisture: 21%
Lab ID: QC326337

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	0.7472	112.0	61.60	54 *	75-125
Arsenic	3.243	56.01	58.46	99	75-125
Barium	43.37	112.0	163.9	108	75-125
Beryllium	0.1558	2.800	2.949	100	75-125
Cadmium	0.2763	11.20	11.38	99	75-125
Chromium	78.71	112.0	194.8	104	75-125
Cobalt	8.487	28.00	35.01	95	75-125
Copper	14.95	14.00	27.93	93 P	75-125
Lead	47.10	112.0	163.1	104	75-125
Molybdenum	0.4350	22.40	21.99	96	75-125
Nickel	47.89	28.00	79.39	112 P	75-125
Selenium	0.1808	56.01	54.60	97	75-125
Silver	0.8145	11.20	12.02	100	75-125
Thallium	0.2139	56.01	52.30	93	75-125
Vanadium	42.66	28.00	72.48	107 P	75-125
Zinc	77.84	28.00	102.3	87 P	75-125

Type: MSD Moisture: 21%
Lab ID: QC326338

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	137.6	78.01	56 *	75-125	3	30
Arsenic	68.79	72.50	101	75-125	2	30
Barium	137.6	185.5	103	75-125	3	30
Beryllium	3.440	3.591	100	75-125	0	30
Cadmium	13.76	14.11	101	75-125	1	30
Chromium	137.6	243.1	119	75-125	10	30
Cobalt	34.40	42.33	98	75-125	3	30
Copper	17.20	32.54	102	75-125	5	30
Lead	137.6	189.7	104	75-125	0	30
Molybdenum	27.52	27.16	97	75-125	1	30
Nickel	34.40	100.9	154 * P	75-125	16	30
Selenium	68.79	68.21	99	75-125	2	30
Silver	13.76	13.06	89	75-125	11	30
Thallium	68.79	64.52	93	75-125	1	30
Vanadium	34.40	79.55	107 P	75-125	1	30
Zinc	34.40	116.6	113 P	75-125	7	30

*= Value outside of QC limits; see narrative
P= Sample concentration > spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Batch QC Report

California Title 26 Metals

Lab #:	184591	Location:	Presidio SF 207/231
Client:	Mactec, Inc.	Prep:	EPA 3050B
Project#:	4089041001.109	Analysis:	EPA 6010B
Field ID:	207TP100(5.0)	Basis:	dry
Type:	Serial Dilution	Diln Fac:	5.000
MSS Lab ID:	184508-001	Batch#:	110039
Lab ID:	QC326339	Sampled:	01/23/06
Matrix:	Soil	Received:	01/24/06
Units:	mg/Kg	Analyzed:	02/01/06

Moisture: 21%

Analyte	MSS Result	MSS RL	Result	RL	% Diff	Lim
Antimony	0.7472	4.040	ND	20.20		10
Arsenic	3.243	0.3367	3.206	1.683		10
Barium	43.37	0.6733	42.34	3.367	2	10
Beryllium	0.1558	0.1347	0.1266 J	0.6733		10
Cadmium	0.2763	0.3367	0.2674 J	1.683		10
Chromium	78.71	0.6733	75.82	3.367	4	10
Cobalt	8.487	1.347	8.375	6.733	1	10
Copper	14.95	0.6733	14.20	3.367	5	10
Lead	47.10	0.2020	46.86	1.010	1	10
Molybdenum	0.4350	1.347	0.5309 J	6.733		10
Nickel	47.89	1.347	47.18	6.733	1	10
Selenium	0.1808	0.3367	ND	1.683		10
Silver	0.8145	0.3367	0.4791 J	1.683		10
Thallium	0.2139	0.3367	0.7291 J	1.683		10
Vanadium	42.66	0.6733	40.35	3.367	5	10
Zinc	77.84	1.347	76.47	6.733	2	10

J= Estimated value
ND= Not Detected
RL= Reporting Limit

MACTEC

5341 Old Redwood Highway
Suite 300
Petaluma, CA 94954
(707) 793-3800

CHAIN OF CUSTODY FORM

Seq No: № 1463

Samplers: J. A. HENKE

Lab: CURTIS TOMPKINS

Job Number: 408904.00.109

Name/Location: FRES. 210 9th 2001231

Project Manager: M. A. JACOBOWITZ Recorder: (Signature Required)

MATRIX			# CONTAINERS & PRESERV.					SAMPLE NUMBER		DATE				STATION DESCRIPTION	
Water	Soil	Air	Unpres.	H2SO4	HNO3	HCL		YR	SEQ	YR	MO	DAY	TIME		DEPTH
	✓		1					23	0TP10C(4.0)	06	01	27	0045		14S,14SD
N/A	✓		1					23	0						
2	✓		1					DUP(012706)		06	01	27	0850		
3	✓					3		TB(012706)		06	01	27	0920		

ANALYSIS REQUESTED

BTEX (8270)	VOC (8260)	TPH-g (GRO)	TPH-d, Fo (8015 modified)	TPH METHANES (8015 modified)	TEST (8081)	PCB (8082)
✓✓	✓	✓	✓	✓	✓	✓
✓✓	✓	✓	✓	✓	✓	✓
✓✓	✓	✓	✓	✓	✓	✓
	✓✓					

ADDITIONAL INFORMATION

SAMPLE NUMBER		TURNAROUND TIME/ REMARKS
YR	SEQ	
		☒ STANDARD TAT
		☒ RESULTS TO G.A. GABOL
		(510) 628 3212

CHAIN OF CUSTODY RECORD

J. A. HENKE		MACTEC	1125
Relinquished By (Signature)	(Print Name)	(Company)	Date/Time
Tony Rojas	Tony Rojas	CT	1125
Received By (Signature)	(Print Name)	(Company)	Date/Time
Relinquished By (Signature)	(Print Name)	(Company)	Date/Time
Received By (Signature)	(Print Name)	(Company)	Date/Time
Relinquished By (Signature)	(Print Name)	(Company)	Date/Time
Received By (Signature)	(Print Name)	(Company)	Date/Time

Method of Shipment: CT COURIER

F1008-B (5/04)

Laboratory Copy *White* | Project Office Copy *Yellow* | Field or Office Copy *Pink*

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 184591 Date Received: 1-27-06 Number of Coolers: 1
Client: Mactec Project: 4089 041001.109

A. Preliminary Examination Phase
Date Opened: 1-27-06 By (print): Troy Windsor (sign) Troy Windsor

1. Did cooler come with a shipping slip (airbill, etc.)? YES (NO)
If YES, enter carrier name and airbill number:
2. Were custody seals on outside of cooler? YES (NO)
How many and where? Seal date: Seal name: N/A
3. Were custody seals unbroken and intact at the date and time of arrival? YES NO
4. Were custody papers dry and intact when received? (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? (YES) NO
6. Did you sign the custody papers in the appropriate place? (YES) NO
7. Was project identifiable from custody papers? (YES) NO
If YES, enter project name at the top of this form.
8. If required, was sufficient ice used? Samples should be 2-6 degrees C. (YES) NO
Type of ice: wet Temperature: 5.7

B. Login Phase
Date Logged In: 1-27-06 By (print): Troy Windsor (sign) Troy Windsor

1. Describe type of packing in cooler: In ziploc type bags
2. Did all bottles arrive unbroken? (YES) NO
3. Were labels in good condition and complete (ID, date, time, signature, etc.)? (YES) NO
4. Did bottle labels agree with custody papers? (YES) NO
5. Were appropriate containers used for the tests indicated? (YES) NO
6. Were correct preservatives added to samples? (YES) NO
7. Was sufficient amount of sample sent for tests indicated? (YES) NO
8. Were bubbles absent in VOA samples? If NO, list sample Ids below (YES) NO
9. Was the client contacted concerning this sample delivery? YES NO
If YES, give details below.
Who was called? By whom? Date:

Additional Comments:

ATTACHMENT C

DATA VALIDATION REPORT

TO: Mary Jo Heassler, Mactec E & C, Inc. March 30, 2006

FROM: Donna Breaux, DataVal, Inc.

DATA VALIDATION SUMMARY REPORT FOR THE BUILDING 231/207 SITE, THE PRESIDIO OF SAN FRANCISCO, CA

LABORATORY: Curtis & Tompkins, Ltd., Berkeley, CA

SAMPLING DATES: January 23 and 27, 2006

Data validation of Level III laboratory data packages was performed according to the project-specific guidelines. These guidelines were outlined in the Presidio-wide Quality Assurance Project Plan, Sampling and Analysis Plan, April, 2001; the U. S. Environmental Protection Agency Contract Laboratory Program National Functional Guidelines for Organic Data Review, October, 1999; and the U. S. Environmental Protection Agency Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004.

The data were reviewed for holding times, surrogate recoveries, blanks, laboratory control samples (LCS), matrix spikes (MS), matrix spike duplicates (MSD), GC/MS tunes, performance evaluation mix (PEM) standards, ICP interference check standards, ICP serial dilutions, initial calibrations, continuing calibration verification (CCV) standards and internal standards.

The following paragraphs highlight the essential findings of the data validation effort:

I. **Volatile Organic Compounds by GC/MS (8260B)**

Overall, the data are usable as reported with any added qualifiers. Qualifications were required for the reasons noted in Sections C, D and I.

A. Reporting Limits

The laboratory reporting limits for VOCs in water and soil matrix samples met the project required reporting limits, with the following exceptions:

1. It should be noted that the reporting limits for all soils were raised due to dry weight correction.
2. The following table lists the compounds for which the laboratory reporting limits did not meet the project required reporting limits listed in Table 2-6.8-1 of the QAPP.

Compound	Matrix	Laboratory Reporting Limit	Project Required Reporting Limit
Bromoform	Water	1.0 ug/L	0.5 ug/L
Bromomethane	Water	1.0 ug/L	0.5 ug/L
Chloroethane	Water	1.0 ug/L	0.5 ug/L
Chloromethane	Water	1.0 ug/L	0.5 ug/L
Methylene chloride	Water	10 ug/L	4.5 ug/L
Acetone	Soil	20 ug/kg	10 ug/kg
Methylene chloride	Soil	20 ug/kg	5 ug/kg
Vinyl acetate	Soil	50 ug/kg	10 ug/kg

B. Holding Times

Technical holding time criteria were met for all project samples.

C. Surrogate Recoveries

Surrogate spike recoveries met QC acceptance criteria for all project samples, with the following exception:

1. The percent recovery for surrogate bromofluorobenzene was outside the 86%-115% project acceptance criteria in sample TB(012706) (184591-003) at 116%. The detected result for chloroform in this sample was qualified as estimated with a high bias (J+). Qualification was not required for non-detected results.

See Table 2 of this report for a summary of qualifications due to surrogate percent recovery failure.

D. Blanks

Target analytes were not observed in any laboratory method blanks or trip blanks associated with the project samples, with the following exceptions:

1. Laboratory method blank QC325778 had a detected level of methylene chloride at 3.5 ug/kg. The associated samples had methylene chloride values greater than ten times the blank amount, and qualification was not required.
2. Laboratory method blank QC326020 had a detected level of methylene chloride at 4.7 ug/kg. The detected results for methylene chloride in the associated project samples were changed to non-detect (U) if those values were less than ten times the blank amount.
3. Trip blank TB(012706) (184591-003) had a detected level of chloroform at 1.1 ug/L. The associated samples were non-detect for chloroform, and qualification was not required.

See Table 2 of this report for a summary of qualifications due to blank contamination.

E. Laboratory Control Samples

All QC criteria were met for the laboratory control samples associated with the project samples.

F. Matrix Spike/Matrix Spike Duplicate
All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples.

G. GC/MS Tunes
All QC criteria were met for the GC/MS tunes associated with the project samples.

H. Initial Calibration
Initial calibration criteria were met for all calibration standards associated with the project samples.

I. Continuing Calibration
Continuing calibration criteria were met for all continuing calibration standards associated with the project samples, with the following exceptions:

1. The 1/26/06 at 11:18 soil matrix continuing calibration standard analyzed on instrument MSBNA03 had three compounds with percent differences (%Ds) less than -25%: acetone (-26%), 2-butanone (-28%) and 1,2-dibromo-3-chloropropane (-27%). The results for acetone, 2-butanone and 1,2-dibromo-3-chloropropane in the associated sample were qualified as estimated with a low bias (J-/UJ).
2. The 1/27/06 at 11:29 soil matrix continuing calibration standard analyzed on instrument MSBNA03 had two compounds with %Ds less than -25%: 2-butanone (-28%) and 1,2-dibromo-3-chloropropane (-29%). The results for 2-butanone and 1,2-dibromo-3-chloropropane in the associated sample were qualified as estimated with a low bias (J-/UJ).

See Table 2 of this report for a summary of qualifications due to continuing calibration percent difference failure.

J. Internal Standards
Internal standard areas and retention times met QC acceptance criteria for all project samples.

II. Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS (8270C-SIM)

Overall, the data are usable as reported with any added qualifiers. Qualification was required for the reason noted in Section J.

A. Reporting Limits
The laboratory reporting limits for PAHs in soil matrix samples met the project required reporting limits. It should be noted that the reporting limits for all soils were raised due to dry weight correction.

B. Holding Times
Technical holding time criteria were met for all project samples.

C. Surrogate Recoveries

Surrogate spike recoveries met QC acceptance criteria for all project samples, with the following exception:

1. Samples with one failing acid surrogate and/or one failing base/neutral surrogate did not require qualification. Those failures were not noted in this report.

D. Blanks

Target analytes were not observed in any laboratory method blanks associated with the project samples.

E. Laboratory Control Samples

All QC criteria were met for the laboratory control samples associated with the project samples.

F. Matrix Spike/Matrix Spike Duplicate

All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples.

G. GC/MS Tunes

All QC criteria were met for the GC/MS tunes associated with the project samples.

H. Initial Calibration

Initial calibration criteria were met for all calibration standards associated with the project samples.

I. Continuing Calibration

Continuing calibration criteria were met for all continuing calibration standards associated with the project samples.

J. Internal Standards

Internal standard areas and retention times met QC acceptance criteria for all project samples, with the following exception:

1. Project sample 207TP100(5.0) (184508-001) had two internal standard areas outside the -50% to +100% acceptance criteria: chrysene-d12 and perylene-d12. The compounds associated with the outlying internal standards: pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene and benzo(g,h,i)perylene, were qualified as estimated (J).

See Table 2 of this report for a summary of qualifications due to internal standard area count failure.

III. Total Petroleum Hydrocarbons (TPH) - Gasoline Range (8015B)

Overall, the data are usable as reported with any added qualifiers. Qualification was required for the reasons noted in Section D.

A. Reporting Limits

The laboratory reporting limits for TPH-gasoline in water and soil matrices met the project required reporting limits. It should be noted that the reporting limits for all soils were raised due to dry weight correction.

B. Holding Times

Technical holding time criteria were met for all project samples.

C. Surrogate Recoveries

Surrogate spike recoveries met QC acceptance criteria for all project samples.

D. Blanks

Target analytes were not observed in any laboratory method blanks or trip blanks associated with the project samples, with the following exceptions:

1. Laboratory method blank QC325846 had a detected level of TPH-gasoline at 14 ug/L. The detected results for TPH-gasoline in the associated project samples were changed to non-detect (U) if those values were less than five times the blank amount.
2. Trip blank TB(012706) (184591-003) had a detected level of TPH-gasoline at 17 ug/L. The associated soil samples were non-detect for TPH-gasoline, and qualification was not required. It should be noted that trip blank sample TB(012706) (184591-003) was previously changed to non-detect (U) due to method blank contamination.

See Table 2 of this report for a summary of qualifications due to blank contamination.

E. Laboratory Control Samples

All QC criteria were met for the laboratory control samples associated with the project samples.

F. Matrix Spike/Matrix Spike Duplicate

All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples.

G. Initial Calibration

Initial calibration criteria were met for all calibration standards associated with the project samples.

H. Continuing Calibration

Continuing calibration criteria were met for all continuing calibration standards associated with the project samples.

IV. Total Petroleum Hydrocarbons – Diesel/Fuel Oil Range (8015B)

Overall, the data are usable as reported. Qualification was not required.

A. Reporting Limits
The laboratory reporting limits for diesel and fuel oil range organics in soil matrix samples met the project required reporting limits. It should be noted that the reporting limits for all soils were raised due to dry weight correction.

B. Holding Times
Technical holding time criteria were met for all project samples.

C. Surrogate Recoveries
Surrogate spike recoveries met QC acceptance criteria for all project samples.

D. Blanks
Target analytes were not observed in any laboratory method blanks associated with the project samples.

E. Laboratory Control Samples
All QC criteria were met for the laboratory control samples associated with the project samples.

F. Matrix Spike/Matrix Spike Duplicate
All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples.

G. Initial Calibration
Initial calibration criteria were met for all calibration standards associated with the project samples.

H. Continuing Calibration
Continuing calibration criteria were met for all continuing calibration standards associated with the project samples.

V. Organochlorine Pesticides (8081A)

Overall, the data are usable as reported. Qualification was not required.

A. Reporting Limits
The laboratory reporting limits for pesticides in soil matrix samples met the project required reporting limits, with the following exception:

1. The laboratory reporting limit did not meet the project required reporting limit listed in Table 2-6.5-1 of the QAPP for toxaphene. The laboratory reported 60 ug/kg for toxaphene. The project required reporting limit was 40 ug/kg.

2. The results for all pesticides in samples 207TP100(5.0) (184508-001) and 207TP100(9.5) (184508-002) were reported as non-detected at five-fold dilutions due to the nature of the sample matrix. The reporting limits were raised by the dilution factor.
3. It should be noted that the reporting limits for all soils were raised due to dry weight correction.

B. Holding Times

Technical holding time criteria were met for all project samples.

C. Surrogate Recoveries

Surrogate spike recoveries met QC acceptance criteria for all project samples, with the following exception:

1. Surrogate recoveries that failed in samples with five-fold dilutions or greater did not require qualification, and were not noted in this report.

D. Blanks

Target analytes were not observed in any laboratory method blanks associated with the project samples, with the following exception:

1. Laboratory method blank QC325723 had a detected level of endosulfan I at 0.51 ug/kg. The associated samples were non-detect for endosulfan I, and qualification was not required.

E. Laboratory Control Samples

All QC criteria were met for the laboratory control samples associated with the project samples.

F. Matrix Spike/Matrix Spike Duplicate

All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples.

G. Performance Evaluation Mix (PEM) Check Standards

All PEM check standards met the project degradation criteria of 20% for endrin and 4,4'-DDT.

H. Initial Calibration

Initial calibration criteria were met for all calibration standards associated with the project samples. Data was reported from two columns, and calibration standards with percent relative standard deviations (%RSDs) that failed criteria on one column did not require qualification if sample results were reported from the column in control. Those failures were not noted in this report.

I. Continuing Calibration

Continuing calibration criteria were met for all continuing calibration verification (CCV) standards associated with the project samples, with the following exceptions:

1. Qualification was not required for samples with non-detect results associated with high-failing CCVs. Those failures were not noted in this report.
2. Data was reported from two columns, and CCVs with failing percent differences on one column did not require qualification if sample results were reported from the column in control. Those failures were not noted in this report.

VI. Polychlorinated Biphenyls (8082)

Overall, the data are usable as reported. Qualification was not required.

A. Reporting Limits

The laboratory reporting limits for PCBs in soil matrix samples met the project required reporting limits. It should be noted that the reporting limits for all soils were raised due to dry weight correction.

B. Holding Times

Technical holding time criteria were met for all project samples.

C. Surrogate Recoveries

Surrogate spike recoveries met QC acceptance criteria for all project samples.

D. Blanks

Target analytes were not observed in any laboratory method blanks associated with the project samples.

E. Laboratory Control Samples

All QC criteria were met for the laboratory control samples associated with the project samples.

F. Matrix Spike/Matrix Spike Duplicate

All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples.

G. Initial Calibration

Initial calibration criteria were met for all calibration standards associated with the project samples.

H. Continuing Calibration

Continuing calibration criteria were met for all continuing calibration standards associated with the project samples.

VII. Total Metals (6010B/7471A)

Overall, the data are usable as reported with any added qualifiers. Qualifications were required for the reasons noted in Section E.

A. Reporting Limits

The laboratory reporting limits for metals in soil matrix samples met the project required reporting limits listed in Tables 2-5.21-1 and 2-5.26-1 of the QAPP. It should be noted that the reporting limits for all soils were raised due to dry weight correction.

B. Holding Times

Technical holding time criteria were met for all project samples.

C. Blanks

Target analytes were not observed in any laboratory method blanks associated with the project samples, with the following exceptions:

1. Method blank QC326334 had detected levels of chromium (0.054 mg/kg), lead (0.054 mg/kg) and thallium (0.036 mg/kg). The associated samples had chromium, lead and thallium values with either non-detect or greater than five times the blank amounts, and qualification was not required.

D. Laboratory Control Samples

All QC criteria were met for the laboratory control samples associated with the project samples.

E. Matrix Spike/Matrix Spike Duplicate

All QC criteria were met for the matrix spikes and matrix spike duplicates associated with the project samples, with the following exceptions:

1. The percent recoveries for antimony and nickel failed the 75%-125% project acceptance criteria in QC samples 207TP100(5.0) MS and/or MSD. The detected results for antimony in the associated samples were qualified as estimated with a low bias (J-). The detected results for nickel in the associated samples were qualified as estimated with a high bias (J+). (QC batch 110039)
2. The percent recovery for mercury failed the 75%-125% project acceptance criteria in QC sample 184534-001 MSD. The parent sample was associated with a site unrelated to the project site, and qualification of project samples was not required. (QC batch 109972)

See Table 2 of this report for a summary of qualifications due to matrix spike percent recovery failures.

F. ICP Interference Check Standards

All QC criteria were met for the ICP interference check standards associated with the project samples.

G. ICP Serial Dilution
All QC criteria were met for the ICP serial dilutions associated with the project samples.

H. Initial and Continuing Calibrations
All initial and continuing calibration standards associated with the project samples met QC acceptance criteria.

SUMMARY

The attached Table 1 lists the samples and analyses included in the data validation effort. The attached Table 2 summarizes the data qualifications of all project samples for each test method included in the data packages.

USABILITY

The quality control criteria were reviewed, and other than those discussed above, all criteria were met and the data are considered acceptable. Estimated sample results (J/UJ) are usable only for limited purposes. Based upon the cursory level data validation, all other results are considered valid and usable for all purposes.

VALIDATION QUALIFIERS IDENTIFICATION

The definitions of the following qualifiers are prepared according to the document, "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," October, 1999.

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. *A minus sign (-) indicates the numerical value has a low bias. A plus sign (+) indicates the numerical value has a high bias.*

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

FIELD QC

The following paragraphs highlight the essential findings of the field duplicate samples:

Field duplicate precision was evaluated by calculating the relative percent difference (RPD) between detected results in the original sample and its associated duplicate. The control limit used for field duplicates was a relative percent difference less than or equal to 50 percent, or the absolute difference of the two results must be less than two times the reporting limit for those analytes that were at or near the detection limit. One sample was collected in duplicate for the Buildings 231/207 sampling event.

Project Sample Primary ID	Laboratory Sample ID	Project Sample Duplicate ID	Laboratory Sample ID
230TP100(4.0)	184591-001	DUP(012706)	184591-002

The attached Table 3 summarizes the field duplicate sample results. The detected results of the original sample and the associated duplicate sample were compared and the calculated RPDs reported. All RPDs met the 50 percent precision control limit requirement.

Table 1
Summary of Samples/Analyses
Bldg. 231 / 207 Site
The Presidio of San Francisco, CA

Site Sample ID	Laboratory Sample ID	Date Sampled	Analyses	Sample Type
207TP100(5.0)	184508-001	23-Jan-06	VOCs (8260B), PAHs (8270C-SIM), TPH-Gasoline (8015B), TPH-Diesel/Fuel Oil (8015B), Pesticides (8081A), PCBs (8082), Total Metals (6010B/7471A)	Soil
207TP100(9.5)	184508-002	23-Jan-06	VOCs (8260B), PAHs (8270C-SIM), TPH-Gasoline (8015B), TPH-Diesel/Fuel Oil (8015B), Pesticides (8081A), PCBs (8082), Total Metals (6010B/7471A)	Soil
230TP100(4.0)	184591-001	27-Jan-06	VOCs (8260B), PAHs (8270C-SIM), TPH-Gasoline (8015B), TPH-Diesel/Fuel Oil (8015B), Pesticides (8081A), PCBs (8082), Total Metals (6010B/7471A)	Soil (1)
DUP(012706)	184591-002	27-Jan-06	VOCs (8260B), PAHs (8270C-SIM), TPH-Gasoline (8015B), TPH-Diesel/Fuel Oil (8015B), Pesticides (8081A), PCBs (8082), Total Metals (6010B/7471A)	FD (1)
TB(012706)	184591-003	27-Jan-06	VOCs (8260B), TPH-Gasoline (8015B)	Trip Blank

VOCs: Volatile Organic Compounds
PAHs: Polynuclear Aromatic Hydrocarbons
TPH: Total Petroleum Hydrocarbons
PCBs: Polychlorinated Biphenyls
FD: Field duplicate of previous numbered sample, (1), (2), etc.

Table 2
Qualified Data Summary
Bldg. 231 / 207 Site
The Presidio of San Francisco, CA

Sample ID	Laboratory ID	Analysis Method	Compound	CAS Number	Qualifier	Reason
207TP100(5.0)	184508-001	8260B	Acetone	67-64-1	J-	Continuing calibration verification percent difference failure
207TP100(5.0)	184508-001	8260B	2-Butanone	78-93-3	UJ	Continuing calibration verification percent difference failure
207TP100(5.0)	184508-001	8260B	1,2-Dibromo-3-chloropropane	96-12-8	UJ	Continuing calibration verification percent difference failure
207TP100(5.0)	184508-001	8270C-SIM	Pyrene	129-00-0	J	Internal standard area count failure
207TP100(5.0)	184508-001	8270C-SIM	Benzo(a)anthracene	56-55-3	J	Internal standard area count failure
207TP100(5.0)	184508-001	8270C-SIM	Chrysene	218-01-9	J	Internal standard area count failure
207TP100(5.0)	184508-001	8270C-SIM	Benzo(b)fluoranthene	205-99-2	J	Internal standard area count failure
207TP100(5.0)	184508-001	8270C-SIM	Benzo(k)fluoranthene	207-08-9	J	Internal standard area count failure
207TP100(5.0)	184508-001	8270C-SIM	Benzo(a)pyrene	50-32-8	J	Internal standard area count failure
207TP100(5.0)	184508-001	8270C-SIM	Indeno(1,2,3-cd)pyrene	193-39-5	J	Internal standard area count failure
207TP100(5.0)	184508-001	8270C-SIM	Dibenz(a,h)anthracene	53-70-3	J	Internal standard area count failure
207TP100(5.0)	184508-001	8270C-SIM	Benzo(g,h,i)perylene	191-24-2	J	Internal standard area count failure
207TP100(5.0)	184508-001	6010B	Antimony	7440-36-0	J-	MS/MSD percent recovery failure
207TP100(5.0)	184508-001	6010B	Nickel	7440-02-0	J+	MS/MSD percent recovery failure
207TP100(9.5)	184508-002	8260B	2-Butanone	78-93-3	J-	Continuing calibration verification percent difference failure
207TP100(9.5)	184508-002	8260B	1,2-Dibromo-3-chloropropane	96-12-8	UJ	Continuing calibration verification percent difference failure
207TP100(9.5)	184508-002	6010B	Antimony	7440-36-0	J-	MS/MSD percent recovery failure
207TP100(9.5)	184508-002	6010B	Nickel	7440-02-0	J+	MS/MSD percent recovery failure
230TP100(4.0)	184591-001	8260B	Methylene chloride	75-09-2	U	Method blank contamination
230TP100(4.0)	184591-001	6010B	Antimony	7440-36-0	J-	MS/MSD percent recovery failure
230TP100(4.0)	184591-001	6010B	Nickel	7440-02-0	J+	MS/MSD percent recovery failure
DUP(012706)	184591-002	8260B	Methylene chloride	75-09-2	U	Method blank contamination
DUP(012706)	184591-002	6010B	Antimony	7440-36-0	J-	MS/MSD percent recovery failure
DUP(012706)	184591-002	6010B	Nickel	7440-02-0	J+	MS/MSD percent recovery failure
TB(012706)	184591-003	8260B	Chloroform	67-66-3	J+	Surrogate percent recovery failure
TB(012706)	184591-003	8015B	Gasoline C7-C12	8006-61-9	U	Method blank contamination

Table 3
Summary of Field Duplicates
Bldg. 231 / 207 Site
The Presidio of San Francisco, CA

Original Sample #	Laboratory ID	Matrix	Analysis Method	Compound	Original Results	Duplicate Sample #	Laboratory ID	Duplicate Results	RPD
230TP100(4.0)	184591-001	Soil	8260B	Methylene chloride	22	DUP(012706)	184591-002	19	15%
230TP100(4.0)	184591-001	Soil	8260B	All other VOCs	ND	DUP(012706)	184591-002	ND	NA
230TP100(4.0)	184591-001	Soil	8270C-SIM	All PAHs	ND	DUP(012706)	184591-002	ND	NA
230TP100(4.0)	184591-001	Soil	8015B	Gasoline C7-C12	ND	DUP(012706)	184591-002	ND	NA
230TP100(4.0)	184591-001	Soil	8015B	Diesel C12-C24	ND	DUP(012706)	184591-002	ND	NA
230TP100(4.0)	184591-001	Soil	8015B	Fuel Oil C24-C36	ND	DUP(012706)	184591-002	ND	NA
230TP100(4.0)	184591-001	Soil	8081A	All pesticides	ND	DUP(012706)	184591-002	ND	NA
230TP100(4.0)	184591-001	Soil	8082	All PCBs	ND	DUP(012706)	184591-002	ND	NA
230TP100(4.0)	184591-001	Soil	6010B	Antimony	0.22	DUP(012706)	184591-002	0.34	-43%
230TP100(4.0)	184591-001	Soil	6010B	Arsenic	4.2	DUP(012706)	184591-002	4.1	2.4%
230TP100(4.0)	184591-001	Soil	6010B	Barium	110	DUP(012706)	184591-002	98	12%
230TP100(4.0)	184591-001	Soil	6010B	Beryllium	0.37	DUP(012706)	184591-002	0.35	5.6%
230TP100(4.0)	184591-001	Soil	6010B	Cadmium	0.2	DUP(012706)	184591-002	0.15	29%
230TP100(4.0)	184591-001	Soil	6010B	Chromium	79	DUP(012706)	184591-002	67	16%
230TP100(4.0)	184591-001	Soil	6010B	Cobalt	13	DUP(012706)	184591-002	14	-7.4%
230TP100(4.0)	184591-001	Soil	6010B	Copper	13	DUP(012706)	184591-002	12	8.0%
230TP100(4.0)	184591-001	Soil	6010B	Lead	4.5	DUP(012706)	184591-002	4.4	2.3%
230TP100(4.0)	184591-001	Soil	7471A	Mercury	0.019	DUP(012706)	184591-002	0.052	< +/- 2X RL
230TP100(4.0)	184591-001	Soil	6010B	Molybdenum	0.47	DUP(012706)	184591-002	0.43	8.9%
230TP100(4.0)	184591-001	Soil	6010B	Nickel	49	DUP(012706)	184591-002	42	15%
230TP100(4.0)	184591-001	Soil	6010B	Selenium	0.22	DUP(012706)	184591-002	ND	NC
230TP100(4.0)	184591-001	Soil	6010B	Silver	ND	DUP(012706)	184591-002	ND	NA
230TP100(4.0)	184591-001	Soil	6010B	Thallium	ND	DUP(012706)	184591-002	0.24	NC
230TP100(4.0)	184591-001	Soil	6010B	Vanadium	68	DUP(012706)	184591-002	62	9.2%
230TP100(4.0)	184591-001	Soil	6010B	Zinc	35	DUP(012706)	184591-002	31	12%

NC: Not calculated. The absolute difference between the sample result and the duplicate sample result is less than the reporting

ND: The sample result was non-detect.

N/A: Not analyzed.

NA: Not applicable. Calculation of the relative percent difference between the sample result and the duplicate sample result is nc

< +/- 2X RL: The positive difference between the sample results is less than two times the reporting limit. This is not considered a field duplicate failure for soil sample results at or near the limit of detection.

* Units for methods 8260B, 8270C-SIM, 8081A and 8082 are ug/kg; units for methods 8015B, 6010B and 7471A are mg/kg.

ATTACHMENT D

FIELD FORMS, LOGS, AND RECORDS

Project: PRESIDIO CF - 207/231 GEO ARCH Job No.: 408904 1001.109
Subject: FIELD INVESTIGATION DAILY REPORT Date: 1/23/06
Equipment Rental: _____ Company: _____ To: M. STEMPER
Equipment Hours: _____ F.E. Time from _____ To: _____ By: A H HENKE

(outside service and expense record must be attached for any outside costs)

0700 ONSITE. MEET WITH ASC ARCHAEOLOGISTS MEET ERRG CREW.
0710 GET WATER FROM HYDRANT
0735 H+S MEETING.
0800 RYAN ONSITE. DISCUSS USE ON ENCORES, RYAN THINKS NOT, PER AGREEMENT WITH JIM PONTON. WILL DISCUSS WITH CRAIG / DEFENDER.
- DISCUSS IRRIGATION N. OF DOYLE. PULL VAULT CONTROL BOXES. RYAN CALLS (MESSAGES) TO TRUST IRRIGATION DEPT. THEY'LL TURN ON SPRINKLERS TO TRACE
- NATIVE PLANTS - RYAN WILL DO NOTIFICATION
0945 BACKHOE ONSITE
1030 TYSON ERRG ONSITE WITH CAUTION TAPE, DELINEATORS. BAKER TANK (~1000 GAL)
1050 SET UP ON 207TP100. TRENCH FROM EAST TO WEST.
1215 PHONE MES. RYAN (BOTH #s) HIT BASE ROCK 3/4" + GEOTEXTILE FABRIC HAVE CREW TAKE LUNCH
1250 RESUME. PHONE CON RYAN OK TO JUST BACKFILL ON ~~AND~~ BASEROCK
1330 207TP100(5.0) - DK GREY FILL SAND SP W/ WOOD + BAY MUD CHUNKS PID=0 ODOR
1340 207TP100(9.5) - BAY SANDS DARK GREY SP.
1400 BEGIN BACKFILLING.
1435 DEPART SITE. 10 HR.

EQUIPMENT JD BACKHOE
EXTENDAHOE, 3' BUCKET.

Attachments:

Initial

FF1

Project: PRESIDIO SF - 207/271 GEOARCHAEOLOGY
Job No.: 4089041001.109
Subject: FIELD INVESTIGATION DAILY REPORT
Date: 1/24/06
Equipment Rental: _____ Company: _____
To: M STEMPER / S SABOL
Equipment Hours: _____ F.E. Time from _____ To: _____
By: A H HENKE

(outside service and expense record must be attached for any outside costs)

0700 ONSITE. GET WATER. ERRG SETTING UP EXCLUSION ZONE AT 207TP101. H+S MEETING WITH FULL CREW (ASC, ERRG)

0740 BEGIN 207TP101.

0840 PHONE CON CT LAB - PICK UP THIS AFTERNOON.

0900 RYAN ONSITE. DISCUSS SAMPLING - NONE AT THIS LOC. SLIGHT PID READINGS (0.5 PPM) IN VICINITY OF SAMPLES ALREADY COLLECTED
- USA CLEARANCE FOR BLDG 230 SOUTH - TRUST UTIL TO DO. COMPLETE 207TP101.

0915 TRUST UTIL ONSITE BOB MOREAU - WILL NOT HAVE TIME TO MARK USA EXTENSION. HE'LL BE ABLE TO MARK TRUST UTIL. GET USA TICKET # FROM RYAN #003971

0930 MARK EXTENSION OF 231TP102.

0940 LOG REST OF 207TP101. ERRG MOBS TO 38TP101

1015 BEGIN 38TP101.

12.00 LUNCH. GEORGE FORD ONSITE.

1240 RESUME

1300 COMPLETE EXCAVATION — LOG + PHOTOGRAPH. BACKFILL IMMEDIATELY DUE TO FAILING SIDEWALLS.

1400 DISCUSS SCHEDULE WITH ASC. WILL SET UP ON 38TP100, ERRG TO LAY OUT PLYWOOD + VISQUEEN TODAY. START TRENCHING IN AM

1415 RELINQUISH SAMPLES TO CT COURIER.

1430 DEPART. ERRG BACKFILLING TRENCHES.

Attachments:

Initial

Project: PRESIDIO SF - 201/211 GEOARCHAEOLOGY Job No.: 4089041001.109
Subject: FIELD INVESTIGATION DAILY REPORT Date: 1/25/06
Equipment Rental: _____ Company: _____ To: M STEMPER, S SABOL
Equipment Hours: _____ F.E. Time from _____ To: _____ By: A HERNKE

(outside service and expense record must be attached for any outside costs)

0700 ONSITE. 38TP100 HAS VISQUEEN OUT + 6 SHEETS PLYWOOD.
0710 H+S MEETING.
0720 PICK UP WATER. ERRG BEGINS TRENCHING 38TP100
0800 PHONE CON RYAN. HE + TRUST UTIL DID NOT DO USA CALL
0850 PHONE USA FOR SOUTHERN EXTENSION OF 230 AREA
USA TICKET 0279273
0930 PHONE CON PGE - NO UTIL.
0950 BACKFILL TRENCH.
1010 ROBERT MOREAN ONSITE. HE'S MARKING TRUST UTIL RIGHT NOW. PASS ON USA #
1015 RYAN ONSITE. BRIEF HIM ON ACTIVITIES. DISCUSS LANE CLOSURE IN BLDG 230 VICINITY. BLOCK OFF LANE DIVERSION FOOTPRINT THE NIGHT BEFORE. DO ON FRI.
1100 MOB TO 231TP103
1125 BEGIN 231TP103
1215 CAVING ON TRENCH. BACKFILL SOUTH END. CREW TAKES LUNCH.
1305 RESUME TRENCHING AT 231TP103.
1340 COMPLETE TRENCH. BACKFILL.
1410 M. STEMPER ONSITE. BRIEF OVERVIEW OF ACTIVITIES
1440 DEPART SITE. ERRG TO BACKFILL TRENCHES WITH BASEROCK + DO SITE CLEAN UP.

Attachments:

Initial

Project: PRESIDIO SF - 201/231 GEOARCHAEOLOGY Job No.: 4089041001.109
Subject: FIELD INVESTIGATION DAILY REPORT Date: 1/26/06
Equipment Rental: _____ Company: _____ To: M. STEMPER, S SABOL
Equipment Hours: _____ F.E. Time from _____ To: _____ By: A H HENRE

(outside service and expense record must be attached for any outside costs)

0650 ONSITE. GET WATER
0655 MEET ERRG. /JIM NORRES. DO SITE WALK.
0715 H&S MEETING
0725 BEGIN 231 TP101
0805 BACKFILL SOUTH END OF TRENCH. (SIDEWALL COLLAPSE)
MOVE TO NORTH & DIG DEEP.
1010 COMPLETE 231TP101 - BACKFILL.
1040 UPDATE RYAN. MOB TO 231TP100 PULL UP AC.
1120 COMPLETE TRENCH - NO CONTAMINATED SOIL OBSERVED IN EITHER TRENCH
1300 BEGIN 231A TP102
1500 COMPLETE 231A TP102. BACKFILL. ERRG BACKFILLS AT SURFACE WITH BASEROCK. UPDATE RYAN. MOVE PIEZOMETERS TO ARCH LAB AREA.
1520 DEPART.

Attachments:

Initial

Sheet 5 of 5

Project: PRESIDIO SF - 201/231 GEOARCHAEOLOGY Job No.: 40890410001.109
Subject: FIELD INVESTIGATION DAILY REPORT Date: 1/27/06
Equipment Rental: _____ Company: _____ To: M. STEMPER, S SABOL
Equipment Hours: _____ F.E. Time from _____ To: _____ By: A H HENKE

(outside service and expense record must be attached for any outside costs)

0700 ONSITE. GET WATER. MOVE EXCLUSION ZONE TO Z30TP100

0730 H&S MEETING. TRAFFIC CONTROL SET UP.

0740 PEEL UP AC

0845 Z30TP100 (4.0) @ 4-4.5 NO VISIBLE CONTAM.

0850 DUP (012706) @ 4-4.5

0905 PHONE CON RYAN - HE'S ATTEMPTING TO LOCATE TRUST UTIL PERSONNEL TO LOOK AT BROKEN TERRA COTTA PIPES.

0910 UPDATE S. SABOL

0915 PHONE CON - TONY CT. SAMPLES READY

0920 TB(012706)

TRUST + UTIL + RYAN ONSITE. TERRA COTTA LINES NOT ON HIS DRAWINGS. PLUG WITH CONCRETE TO ABANDON

0930 BACKFILL DEEP END OF TRENCH

CLEAN UP EQUIP. ERRG GETS WATER BUFFALO, CONCRETE

1030 RAIN SHEETING OFF PAVEMENT HAS STANDING WATER IN EXCAVATION

1100 DEWATER EXCAVATION. PLUG ABANDON 2 TERRA COTTA LINES. (CONCRETE) BACKFILL

1145 DEPART. ERRG BACKFILLING

Attachments:

Initial

SITE SAFETY LOG

GENERAL DATA

Job # 408905100 1 . 10 9

Site # PRESIDIO SF

Location Description

GEO ARCH 207/271

DOCUMENTATION OF DAILY MORNING SAFETY MEETING:
TOPICS OF DISCUSSION (check all that apply)

- ✓ scope of work
- ✓ potential hazards
- ___ health and safety plan highlights/revisions
- ✓ emergency procedures
- ✓ PPE requirements
- ✓ air monitoring action levels
- ___ equipment calibration
- ___ special topics (specify)_____

MEETING ATTENDEES:

NAME	DATE	COMPANY	SIGNATURE
Michael Meyer	1-23-06	ASC SSU	
A M HENKE	1/23/06	MACTEC	
Graham Dalldorf	1/23/06	ASC SSU	
CHRIS CAPUTO	1/23/06	ASC SSU	
Mike Stoyka	1/23/06	ASC SSU	Michael Stoyka
James Medley	1/23/06	ERRG	James H Medley
Alexis Utvich	1/23/06	ERRG	Alexis Utvich
ENRIQUE MARTINEZ	1-23-06	ERRS	

DAILY INSPECTIONS: (Site crew chief shall initial each completed inspection)

- AM/PM PPE
- ___ field equipment
- ___ vehicles
- ___ safety equipment
- ___ air monitoring equipment
- ✓ field health and safety binder in vehicle

- AM/PM ___ first aid kit
- ___ required eyewash station filled, and charged
- ___ fire extinghisher
- ✓ communication check:
  - method_____
  - time_____

Note any deficiencies:

I acknowledge that the above health and safety program self-audit and inspections have been performed prior to the initiation of scheduled work:

Signature of Site Safety and Health Officer (SSHO): _____

SITE SAFETY LOG

GENERAL DATA

Job # 408904.1001.109

Site # PRESIDIO SF

Location Description
207/231

DOCUMENTATION OF DAILY MORNING SAFETY MEETING:
TOPICS OF DISCUSSION (check all that apply)

- ✓ scope of work
- ___ potential hazards
- ___ health and safety plan highlights/revisions
- ___ emergency procedures
- ___ PPE requirements
- ___ air monitoring action levels
- ___ equipment calibration
- ___ special topics (specify)_____

MEETING ATTENDEES:

NAME	DATE	COMPANY	SIGNATURE
A H HENRE	1/24/06	HACTEC	
Mike Stoyka	1/24/06	SSU ASC	Michael Stoyka
Michael Meyer	1-24-06	SSU ASC	Michael Meyer
Graham Dalldorf	1-24-06	SSU ASC	Graham Dalldorf
Chris Caputo	1-24-06	SSU ASC	
ENRIQUE MARTINEZ	1-24-06	ERRG	Enrique Martinez
TY APPM	1-24-06	ERRG	
Alexis Utrilla	1/24/06	ERRG	Alexis Utrilla

DAILY INSPECTIONS: (Site crew chief shall initial each completed inspection)

- AHH PPE
- ___ field equipment
- ___ vehicles
- ___ safety equipment
- ___ air monitoring equipment
- ✓ field health and safety binder in vehicle
- AHH first aid kit
- ___ required eyewash station filled, and charged
- ___ fire extinghisher
- ✓ communication check:
  - method PHONE
  - time 0700

Note any deficiencies:

I acknowledge that the above health and safety program self-audit and inspections have been performed prior to the initiation of scheduled work:

Signature of Site Safety and Health Officer (SSHO): _____

SITE SAFETY LOG

GENERAL DATA

Job # 4089041001.109

Site # PRESIDIO SF

Location Description
207/221 GEOARCHAEOLOGY

DOCUMENTATION OF DAILY MORNING SAFETY MEETING:
TOPICS OF DISCUSSION (check all that apply)

- ✓ scope of work
- ___ potential hazards
- ___ health and safety plan highlights/revisions
- ___ emergency procedures
- ___ PPE requirements
- ___ air monitoring action levels
- ___ equipment calibration
- ___ special topics (specify)_____

MEETING ATTENDEES:

NAME	DATE	COMPANY	SIGNATURE
A.H. HENKE	1/25/06	MACTEC	
ENRIQUE MARTINEZ	1-25-06	~~ERRG~~	~~E. Martinez~~
SCOTT PETERS	1-25-06	ERRG	S.P.
Alexis Utvich	1-25-06	ERRG	Alexis Utvich
Michael Mayo	1-25-06	SSU ASC	Michael Mayo
Michael Stoyka	1-25-06	SSU ASC	Michael Stoyka
CHRIS CAPUTO	1-25-06	SSU ASC	
Graham Dalldorf	1-25-06	SSU ASC	G. Dalldorf

DAILY INSPECTIONS: (Site crew chief shall initial each completed inspection)

- ~~AHH~~ PPE
- ___ field equipment
- ___ vehicles
- ___ safety equipment
- ___ air monitoring equipment
- ___ field health and safety binder in vehicle
- ~~AHH~~ ___ first aid kit
- ___ required eyewash station filled, and charged
- ___ fire extinghisher
- ✓ ___ communication check:
  - method_____
  - time_____

Note any deficiencies:

I acknowledge that the above health and safety program self-audit and inspections have been performed prior to the initiation of scheduled work:

Signature of Site Safety and Health Officer (SSHO): _____

SITE SAFETY LOG

GENERAL DATA

Job # 4089041001.109

Site # PRES1010 GF

Location Description
207/211 GEOARCHAEOLOGY

DOCUMENTATION OF DAILY MORNING SAFETY MEETING:
TOPICS OF DISCUSSION (check all that apply)

- ✓ scope of work
- ___ potential hazards
- ___ health and safety plan highlights/revisions
- ___ emergency procedures
- ___ PPE requirements
- ___ air monitoring action levels
- ___ equipment calibration
- ___ special topics (specify)_____

MEETING ATTENDEES:

NAME	DATE	COMPANY	SIGNATURE
A HENKE	1/26/06	AECOM	
Graham Dalldorf	1/26/06	ASC - SSU	
CHRIS CAPUTO	1-26-06	ASC - SSU	
Michael Stoyka	1-26-06	ASC - SSU	
JAMES NOYES	1-26-06	ERRG	
Guadalupe Trujillo	1-26-06	ERRG	
Michael Meyer	1-26-06	ASC - SSU	

DAILY INSPECTIONS: (Site crew chief shall initial each completed inspection)

- AHH PPE
- ___ field equipment
- ___ vehicles
- ___ safety equipment
- ___ air monitoring equipment
- ___ field health and safety binder in vehicle
- AHH first aid kit
- ___ required eyewash station filled, and charged
- ___ fire extinghisher
- ___ communication check:
  - method_____
  - time_____

Note any deficiencies:

I acknowledge that the above health and safety program self-audit and inspections have been performed prior to the initiation of scheduled work:

Signature of Site Safety and Health Officer (SSHO): _____

SITE SAFETY LOG

GENERAL DATA

Job # 4089041001.109

Site # PRESIDIO SF

Location Description
207/231

DOCUMENTATION OF DAILY MORNING SAFETY MEETING:
TOPICS OF DISCUSSION (check all that apply)

- ✓ scope of work
- ___ potential hazards
- ___ health and safety plan highlights/revisions
- ___ emergency procedures
- ___ PPE requirements
- ___ air monitoring action levels
- ___ equipment calibration
- ___ special topics (specify)_____

MEETING ATTENDEES:

NAME	DATE	COMPANY	SIGNATURE
~~A H HENKE~~	1/27/06	MACTEC	
JAMES NORES	1/27/06	ERRG	
Guadalupe Trujillo	1/27/06	ERRG	
Michael Stoyka	1/27/06	SSU ASC	Michael Stoyka
CHRIS CAPUTO	1-27-06	SSU ASC	
Michael Meyer	1-27-06	SSU ASC	
Graham Dalldorf	1-27-06	SSU ASC	

DAILY INSPECTIONS: (Site crew chief shall initial each completed inspection)

- ~~AHH~~ PPE
  - ___ field equipment
  - ___ vehicles
  - ___ safety equipment
  - ___ air monitoring equipment
  - ✓ field health and safety binder in vehicle
- ~~AHH~~ first aid kit
  - ___ required eyewash station filled, and charged
  - ___ fire extinghisher
  - ✓ communication check:
    - method PHONE
    - time 0620

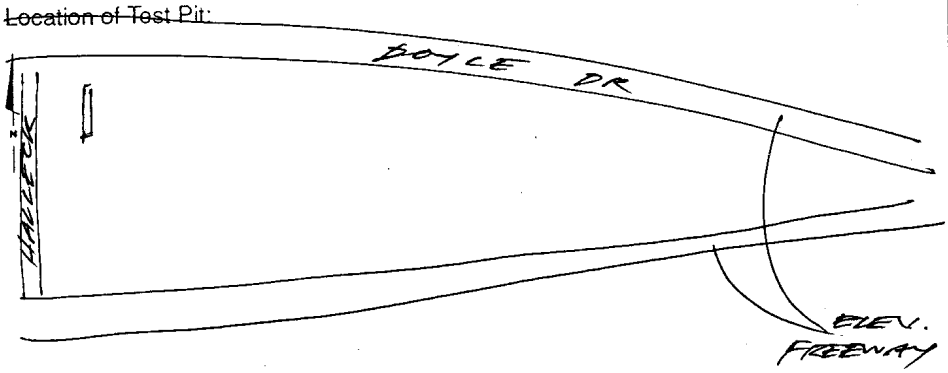
Note any deficiencies:

I acknowledge that the above health and safety program self-audit and inspections have been performed prior to the initiation of scheduled work:

Signature of Site Safety and Health Officer (SSHO): _____

HARDING LAWSON ASSOCIATES

Location of Test Pit:



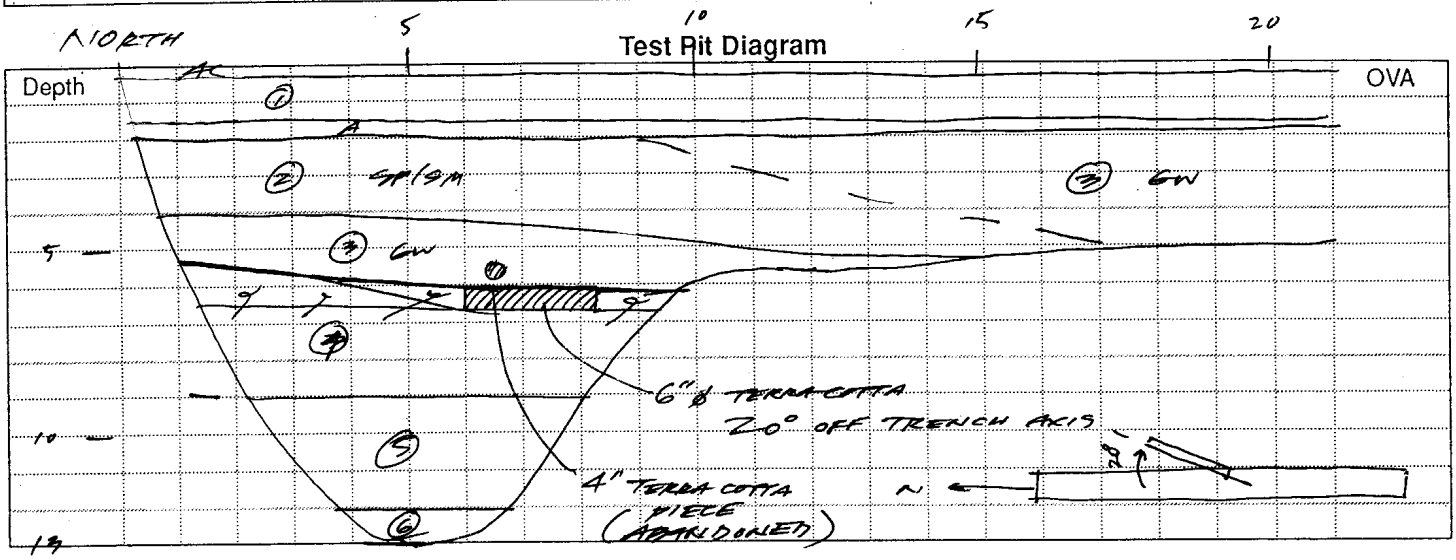
TEST PIT LOG

Test Pit #:	207TP101
Project Name:	PRES SF 207/231
Project #:	408904 1001.109
Proj. Mgr.:	G. SABOL
Started - Date:	
Time:	1/24/06; 0740
Backfilled - Date:	
Time:	1/24/06; 0900
Logged by:	A. HENKE
Edited by:	

Orientation:

Field Conditions:

Test Pit Diagram



Test Pit Descriptions

Description: AC - 3" ASPHALT AT SURFACE.

(1) BROWN WELL GRADED GRAVEL WITH SAND (GW) (10YR4/3) MED.-DENSE - DENSE. MOIST. 70% GRAVEL 25% SAND, 5% FINES. (BASEROCK)

(A) RED CHERT LAYER. NO FINES. WET

(2) DARK YELLOWISH BROWN POORLY GRADED SAND / SILTY SAND (TEXTURAL VARIATIONS) ~~MOIST~~ (SP/SM) (10YR4/4) MOIST. LOOSE. 80-95% SAND 5-20% SILT/FINES + CLAY. WITH INCLUSIONS/LAYERS/FILL EVENTS OF GRAVEL & INCLUDING BRICK AND WOOD (FILL)

(3) GRAVELLY FILL. GENERALLY BROWN WELL-GRADED GRAVEL WITH SAND. TEXTURAL VARIATIONS THROUGHOUT. (GW) (10YR5/3) LOOSE TO MED. DENSE. MOIST TO WET. GENERALLY 60% GRAVEL 30% SAND & 10% FINES. SOME BRICK, REFUSE. (FILL)

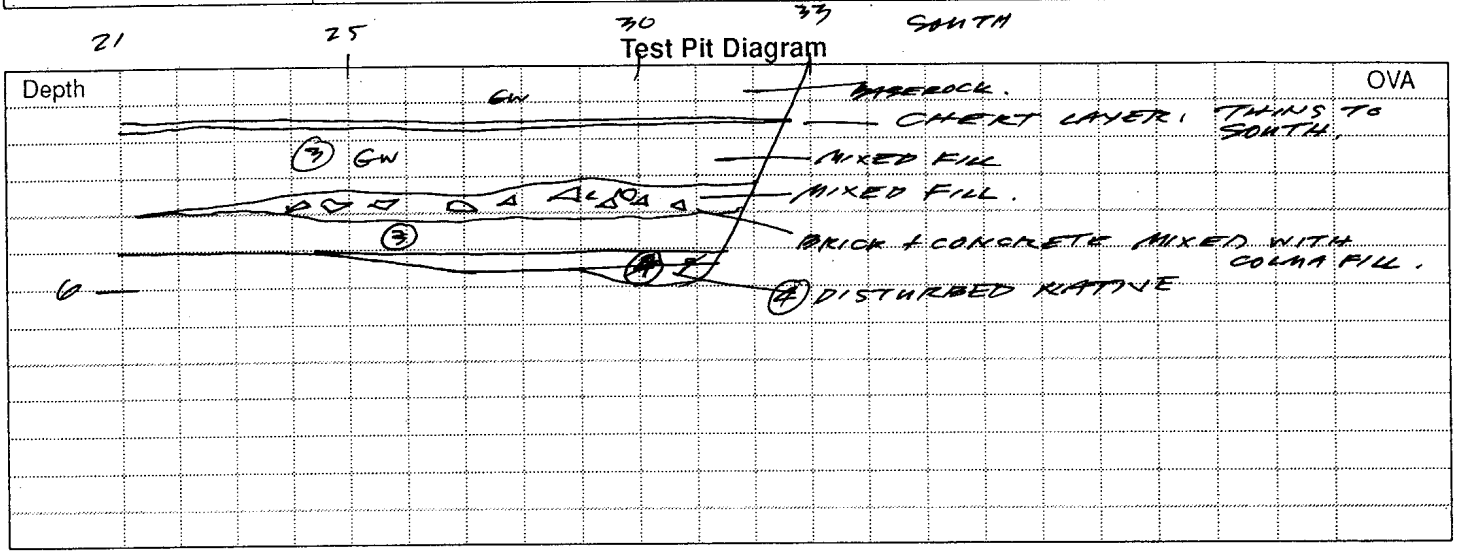
Sample Numbers:

Additional Information:

HARDING LAWSON ASSOCIATES

Location of Test Pit:	TEST PIT LOG
N	Test Pit #: 207TP101
	Project Name:
	Project #:
	Proj. Mgr.:
	Started - Date: 1/29/06
	Time:
	Backfilled - Date:
	Time:
	Logged by:
Orientation: / Field Conditions:	Edited by:

Test Pit Diagram



Test Pit Descriptions

Description: (4) DARK GREY CLAYEY SAND (SC) (5Y4/1) MEDIUM DENSE, MOIST TO WET. ~~AEN~~ GENERALLY 80% SAND 20% CLAY/FINES. SOME INTACT CLAM SHELLS TO ~2" LENGTH. HETEROGENEOUS TEXTURE. (REWORKED NATIVE.)

(5) BAY MUD - DARK GREY FAT CLAY (CH) (5Y4/1) SOFT WET. 90% CLAY 10% ORGANICS/SAND. (NATIVE)

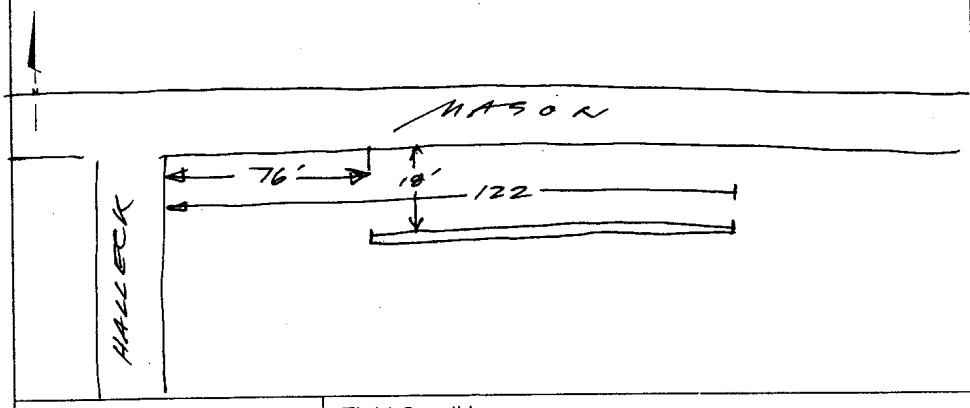
(6) DARK GREY POORLY GRADED SAND (SP) (5Y4/1) LOOSE. WET. ~~90%~~ 90-95% SAND 5-10% CLAY/FINES

Sample Numbers:

Additional Information:

HARDING LAWSON ASSOCIATES

Location of Test Pit:



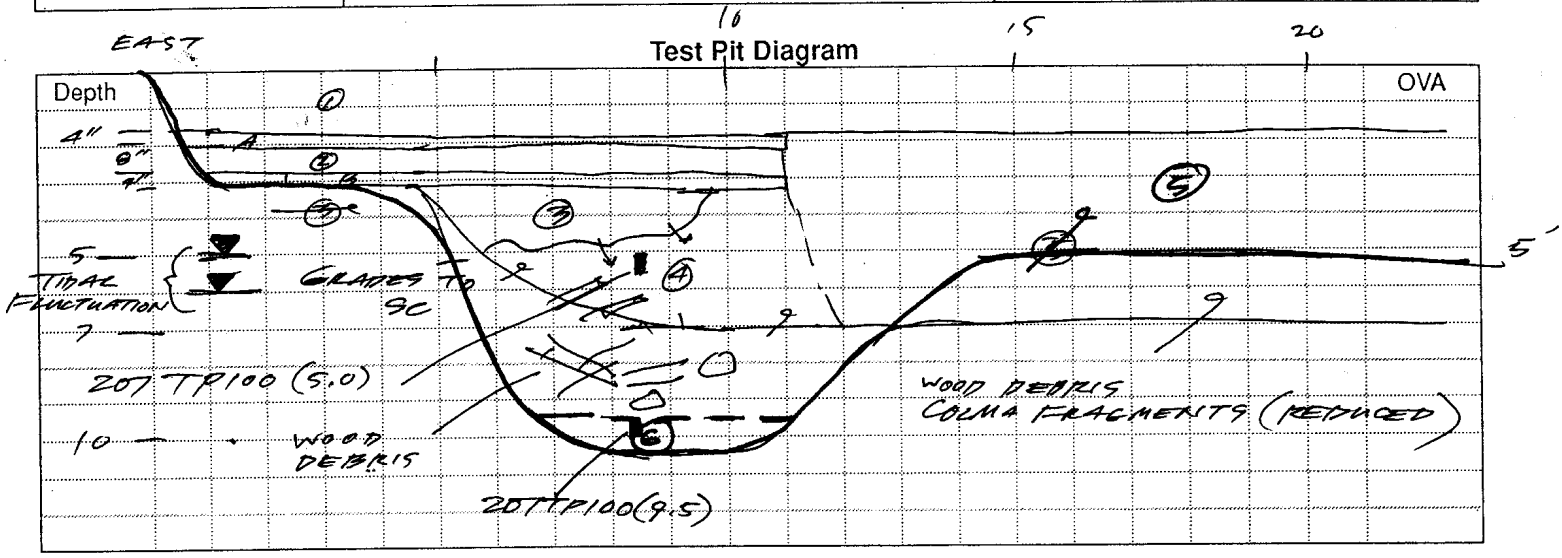
TEST PIT LOG

Test Pit #:	207TP100
Project Name:	PRESIDIO SF 207 221
Project #:	408904100 1.109
Proj. Mgr.:	G. SABOL
Started - Date:	1/23/06
Time:	1050
Backfilled - Date:	1/23/06
Time:	1400
Logged by:	A. HENKE
Edited by:	

Orientation:

Field Conditions:

Test Pit Diagram



Test Pit Descriptions

Description: (1) OLIVE BROWN POORLY GRADED SAND (SP) (2.5Y4/3) LOOSE. MOIST TO WET. 90% FINE-MED. SAND. 5% FINES. 5% GRAVEL INCL. BRICK DEBRIS, ASPHALT

(2) DARK YELLOWISH BROWN CLAY WITH SAND (CL) (10YR4/4) MEDIUM FIRM. MOIST. 75-85% CLAY/FINES. 15-25% SAND. (COLMA DERIVED FILL)

(3) DARK OLIVE GREY POORLY GRADED SAND (SP) (5Y3/4) LOOSE. MOIST 95% MEDIUM SAND. 5% SHELL HASH. WITH INCLUSIONS OF CLAY

(A) RED CHERT GRAVEL

(B) DARK GREY GRAVEL / AC.

(5) DARK BROWN CLAYEY SAND (SC) (10YR 3/3) LOOSE TO MEDIUM DENSE WET. 85-90% SAND 10-15% CLAY/FINES. (EXCAVATION BACKFILL) WITH MINOR AMOUNTS OF BRICK, PORCELAIN.

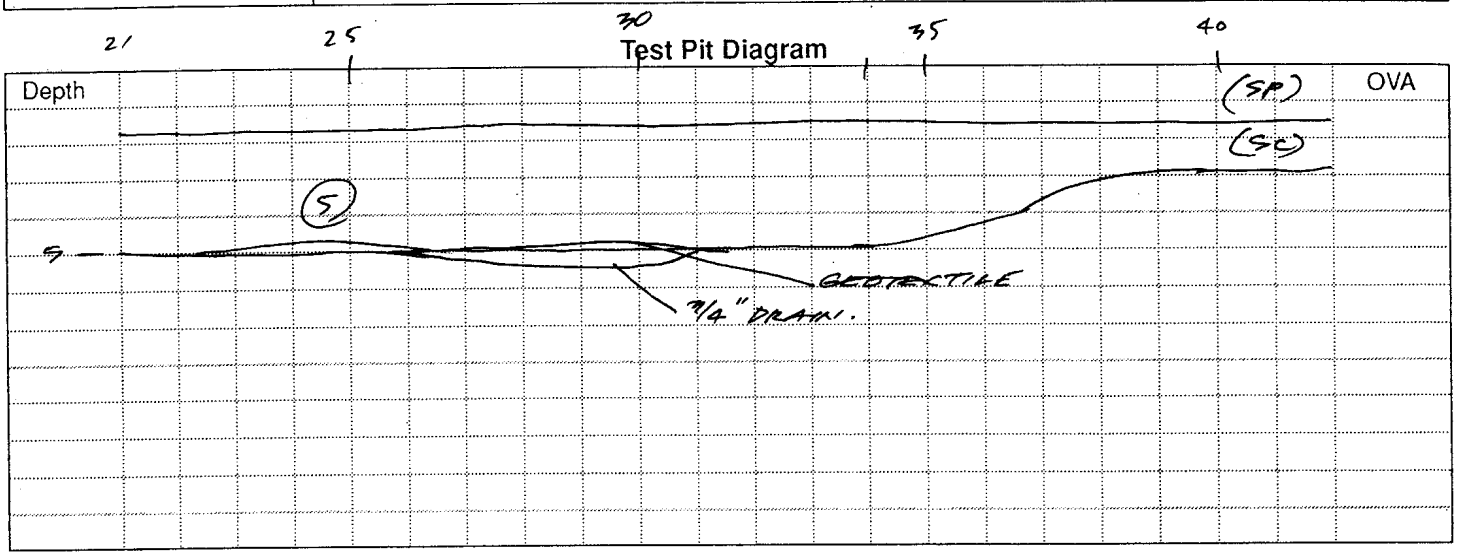
Sample Numbers:

Additional Information:

HARDING LAWSON ASSOCIATES

Location of Test Pit:	TEST PIT LOG
	Test Pit #: 207TP100
	Project Name:
	Project #:
	Proj. Mgr.:
	Started - Date: 1/23/06
	Time:
	Backfilled - Date:
	Time:
	Logged by:
Orientation: / Field Conditions:	Edited by:

Test Pit Diagram



Test Pit Descriptions

Description: (4) DARK GREY POORLY GRADED SAND (SP) (5Y4/1) LOOSE. ~~M~~ WET TO SATURATED. 90% SAND 10% CLAY/FINES. WITH ABUNDANT WOOD DEBRIS. SLIGHT TPH ODOR (1 ppm) (FILL)

(6) DARK GREY POORLY GRADED SAND (SP) (5Y4/1) MEDIUM DENSE. SATURATED 100% SAND (FINE TO MEDIUM) (NATIVE)

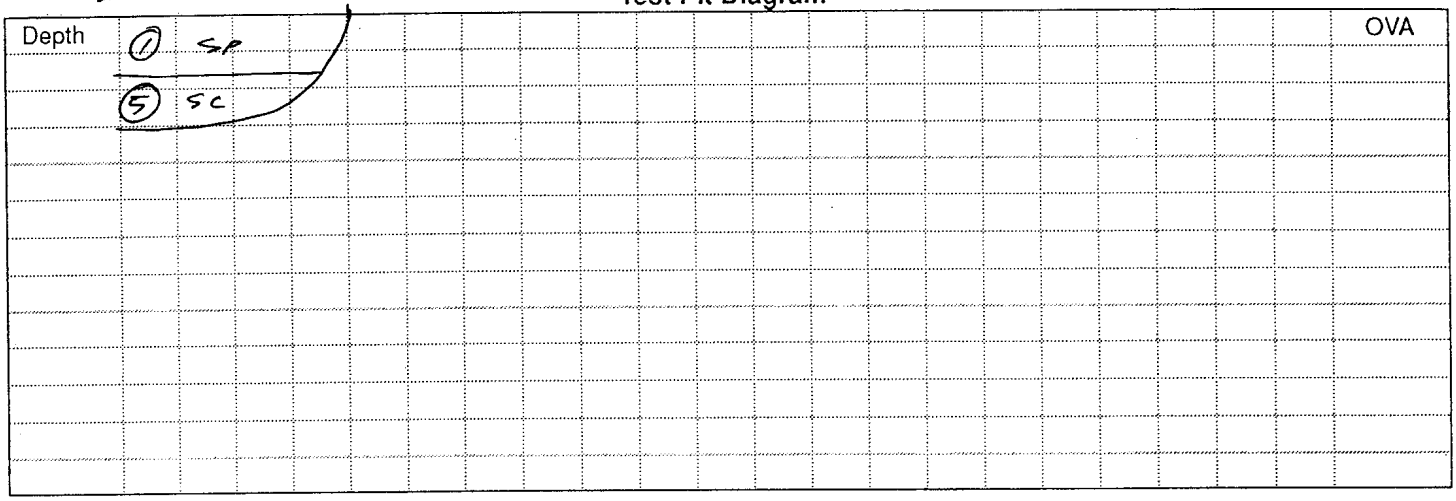
Sample Numbers:

Additional Information:

HARDING LAWSON ASSOCIATES

Location of Test Pit:	TEST PIT LOG
	Test Pit #: 207TP100
	Project Name:
	Project #:
	Proj. Mgr.:
	Started - Date: 1/23/06
	Time:
	Backfilled - Date:
	Time:
	Logged by:
Orientation: / Field Conditions:	Edited by:

Test Pit Diagram

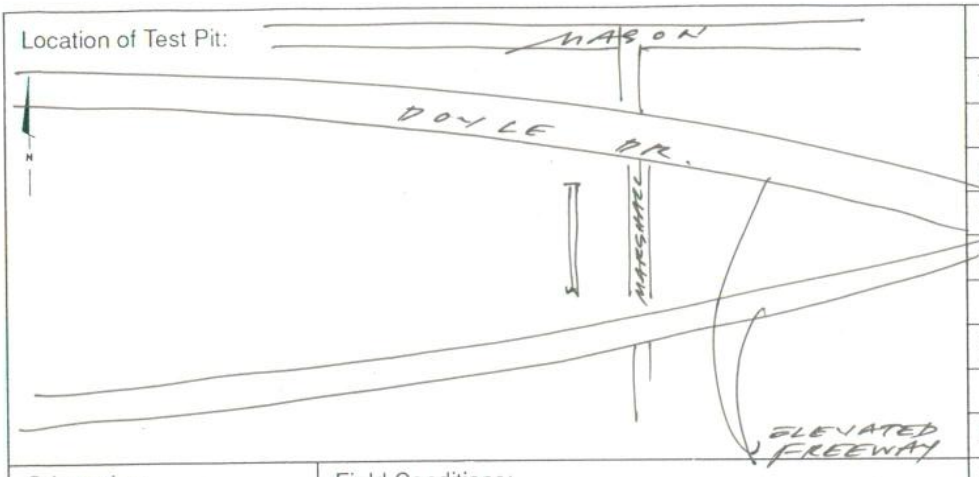


Test Pit Descriptions

Description:
Sample Numbers:
Additional Information:

HARDING LAWSON ASSOCIATES

Location of Test Pit:



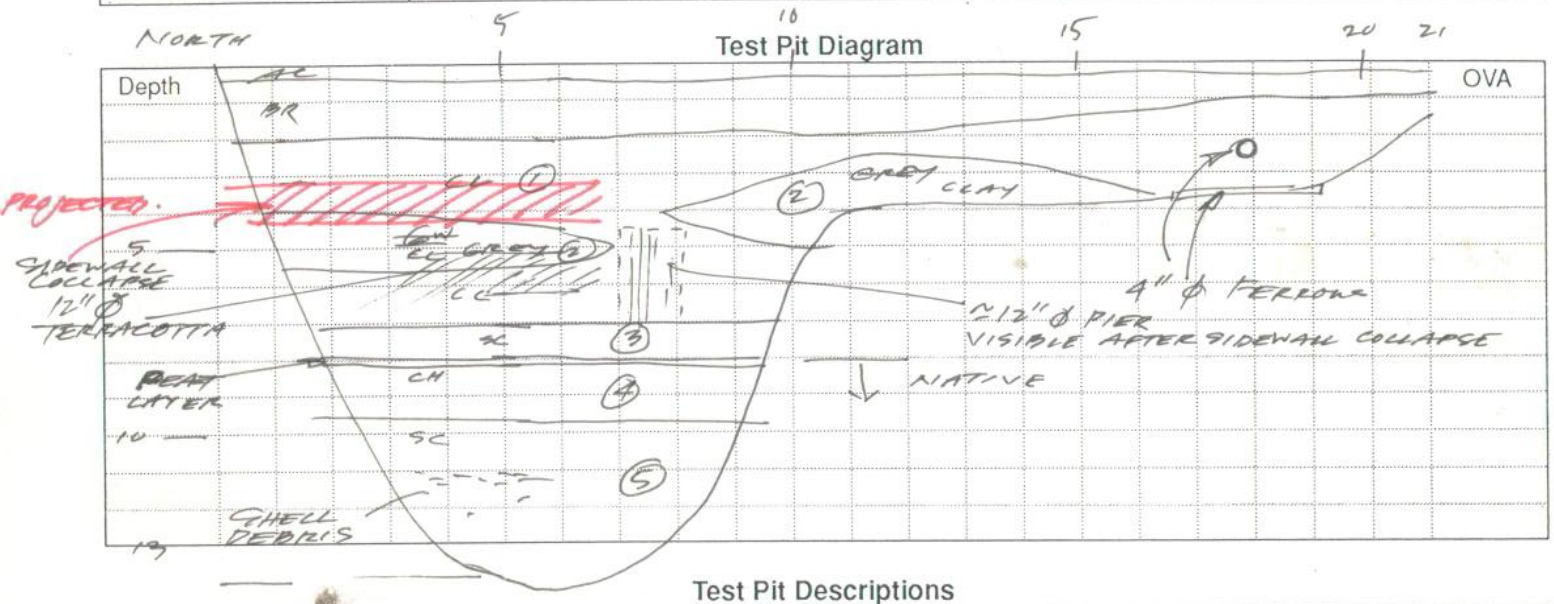
Orientation:

Field Conditions:

TEST PIT LOG

Test Pit #:	98TP101
Project Name:	PRES. SF 201/231
Project #:	408904 1001.109
Proj. Mgr.:	G. SARGL
Started - Date:	1/24/06
Time:	1015
Backfilled - Date:	1/24/06
Time:	1300
Logged by:	A H HENKE
Edited by:	

Test Pit Diagram



Test Pit Descriptions

Description: AC - ASPHALT 3" AT SURFACE

BR - BASEROCK. RED CHERT (TOP 1') AND MIXED FRANCISCAN (1" MINUS) IN SECOND FOOT.

CL (1) DARK YELLOWISH BROWN SANDY LEAN CLAY (CL) (10YR4/4) MEDIUM FIRM. MOIST. 60% CLAY 40% SAND. (COLMA-DERIVED FILL) SOME COLOUR VARIATION.

(2) DARK GREY SANDY CLAY / CLAYEY SAND (CL/SC) TEXTURAL VARIATIONS TO FILL. BAY ORIGIN. DISTURBED

(3) DARK GREY CLAYEY SAND (SC) (5Y4/1) MEDIUM DENSE. WET / SATURATED. 80% CLAY (FILL)

(4) GREY FAT CLAY (CH) (5Y5/1) SOFT. WET. 90% CLAY 10% ORGANICS (NATIVE)

(5) DARK GREY POORLY GRADED SAND (SP) (5Y4/1) MEDIUM DENSE. WET 90% SAND 10% CLAY. SOME CLAYEY SAND LAYERS + SHELL LAYERS IN UNIT.

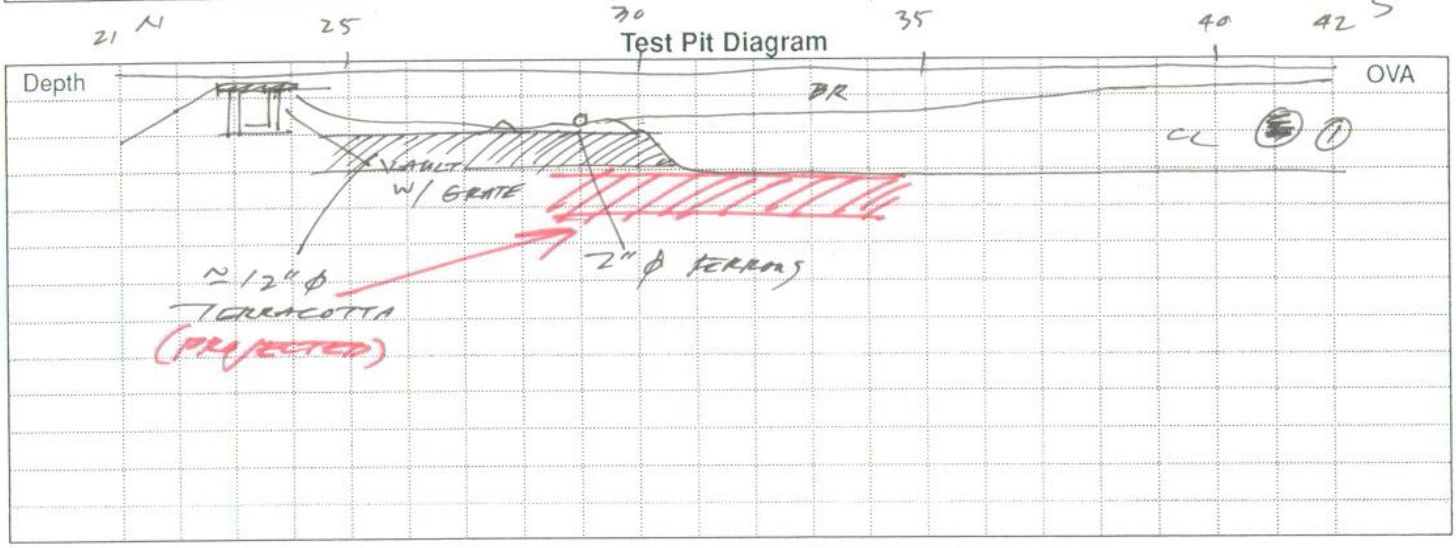
Sample Numbers:

Additional Information: NO STAINING OR SIGNS OF CONTAMINATION.

HARDING LAWSON ASSOCIATES

Location of Test Pit:	TEST PIT LOG
	Test Pit #: 38TP101
	Project Name:
	Project #:
	Proj. Mgr.:
	Started - Date: 1/24/06
	Time:
	Backfilled - Date:
	Time:
	Logged by:
Orientation: / Field Conditions:	Edited by:

Test Pit Diagram



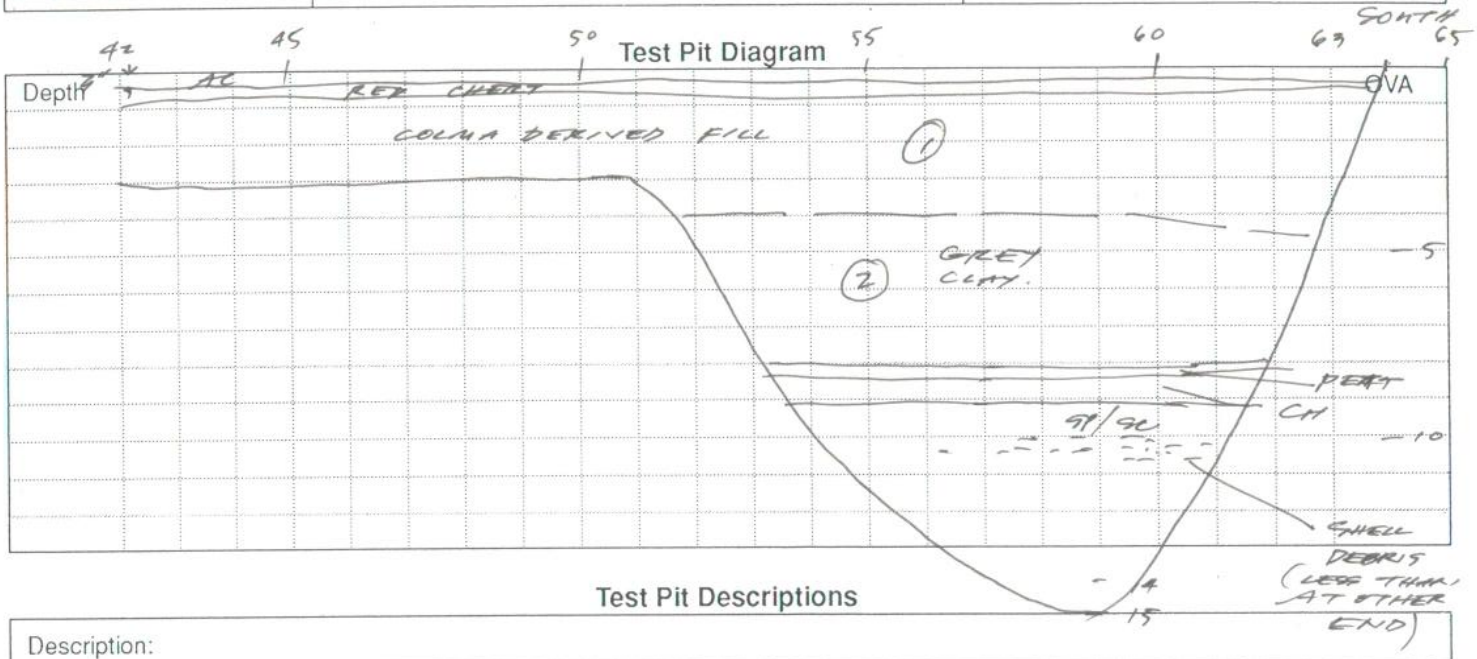
Test Pit Descriptions

Description:
Sample Numbers:
Additional Information:

HARDING LAWSON ASSOCIATES

Location of Test Pit:	TEST PIT LOG
	Test Pit #: 38TP101
	Project Name:
	Project #:
	Proj. Mgr.:
	Started - Date: 1/24/06
	Time:
	Backfilled - Date:
	Time:
	Logged by:
Orientation: / Field Conditions:	Edited by:

Test Pit Diagram

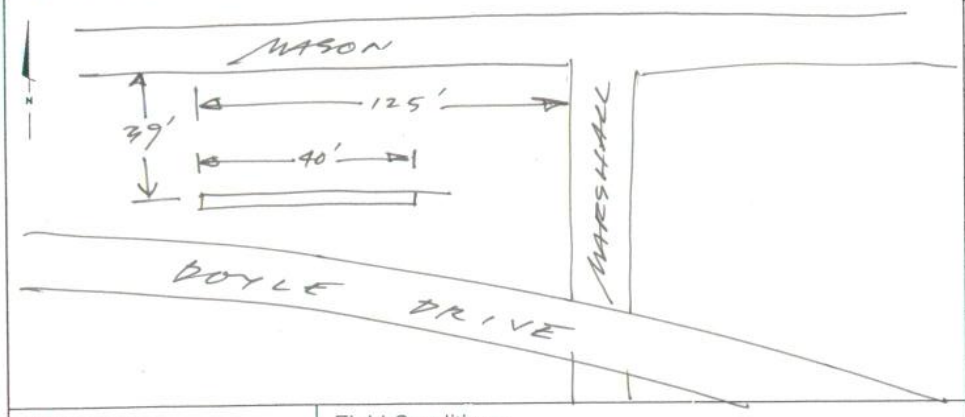


Test Pit Descriptions

Description:
Sample Numbers:
Additional Information:

HARDING LAWSON ASSOCIATES

Location of Test Pit:

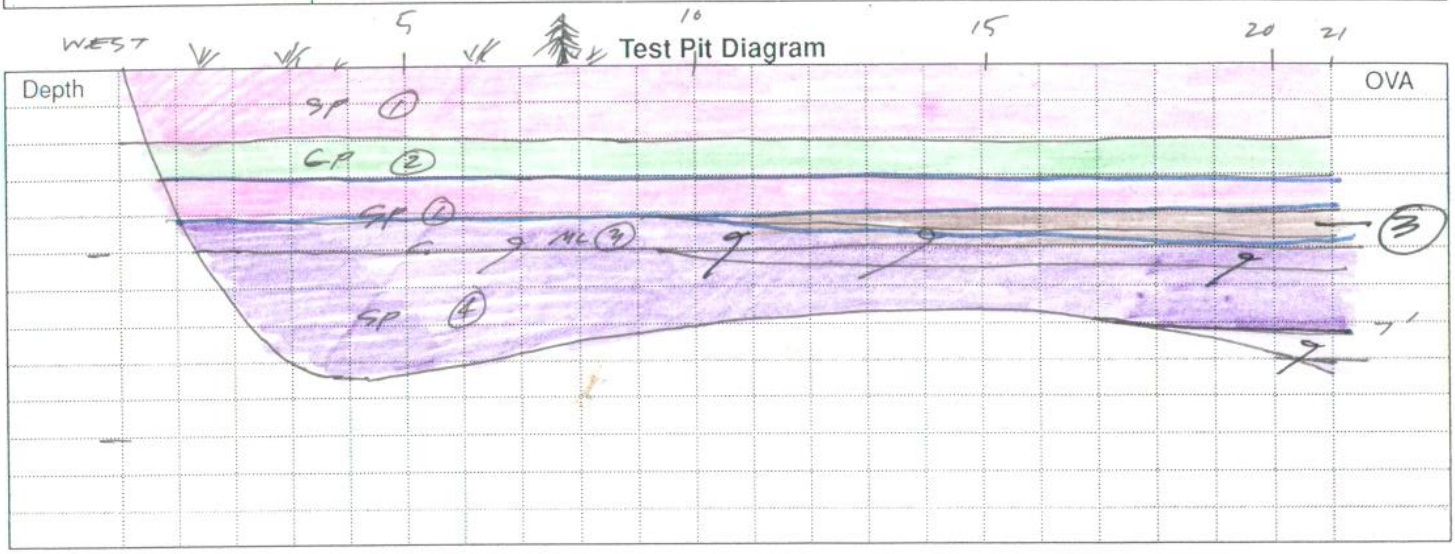


Orientation:

Field Conditions:

TEST PIT LOG	
Test Pit #:	B8TP100
Project Name:	PRES. SF 207/211
Project #:	408904100 1.107
Proj. Mgr.:	S. SAVOL
Started - Date:	1/25/06
Time:	0720
Backfilled - Date:	1/25/06
Time:	0950
Logged by:	A HENRE
Edited by:	

Test Pit Diagram



Test Pit Descriptions

Description: ① LIGHT OLIVE BROWN POORLY GRADED SAND (SP) (2.5Y5/3) LOOSE. MOIST. 95% SAND (FINE-MED) 5% SILT. SOME TERRA COTTA PIPE FRAGMENTS, SHELL HASH (FILL)

② OLIVE BROWN & POORLY-GRADED GRAVEL (GP) (2.5Y4/3) LOOSE WET. 90% GRAVEL (3/4-1.5" Ø) 10% SAND. (FILL)

③ BLACK SANDY SILT (ML) (2.5YN2/0) FIRM TO HARD. MOIST. 70% SILT/CLAY 30% V. FINE SAND. WITH ROOT FIBERS AND ORGANIC MATERIAL. IN PLACES (COMPACTED NATIVE?) HAS LIGHT GREY FAT CLAY ON TOP SURFACE. FAT CLAY IS 1/2 - 2" THICK. 100% CLAY/FINES. DOESN'T APPEAR TO BE NATIVE, BUT DOESN'T HAVE SANDY COMPONENT ASSOCIATED WITH DREDGE SOLIDS. ML LIES EVENLY ON SAND BELOW. DOESN'T LOOK LIKE A NATURAL CONTACT.

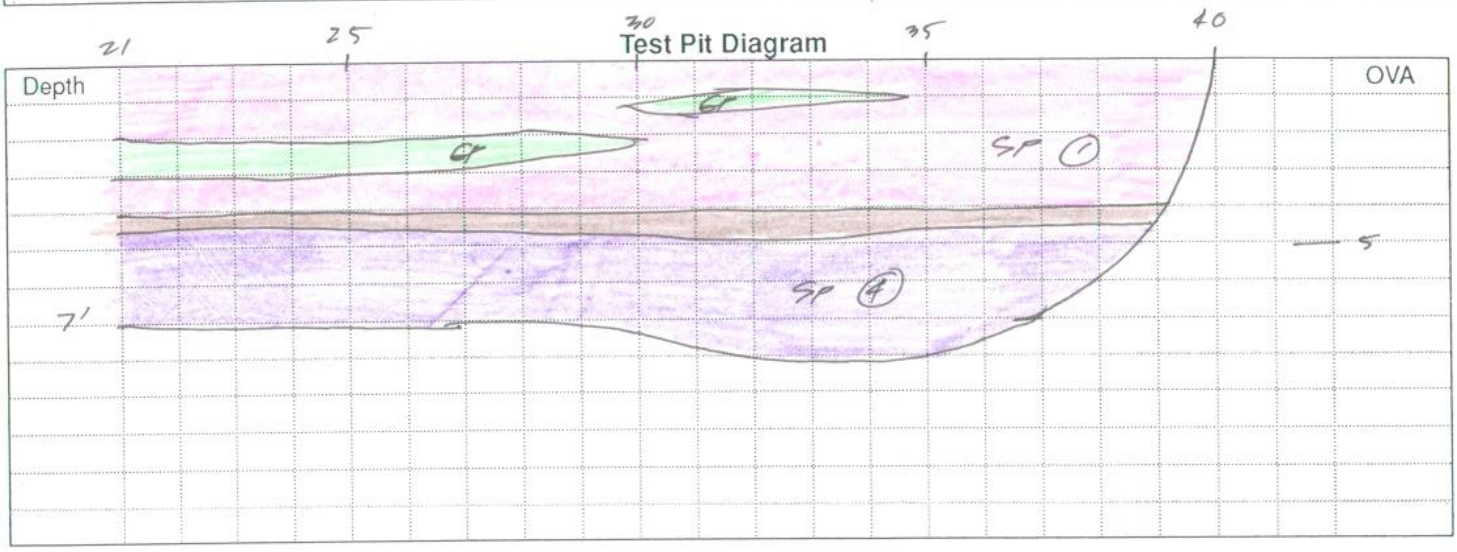
Sample Numbers:

Additional Information:

HARDING LAWSON ASSOCIATES

Location of Test Pit:	TEST PIT LOG
	Test Pit #: 38TP100 (CONT.)
	Project Name:
	Project #:
	Proj. Mgr.:
	Started - Date: 1/25/06
	Time:
	Backfilled - Date:
	Time:
	Logged by:
Orientation: / Field Conditions:	Edited by:

Test Pit Diagram



Test Pit Descriptions

Description: (4) DARK GREY POORLY GRADED SAND (SP) (5Y4/1) LOOSE TO MEDIUM DENSE. MOIST TO WET 95% FINE TO MEDIUM SAND 5% SILT/FINES. NO SHELL OR ANTHROPOGENIC MATERIAL. MASSIVE. NO BEDDING STRUCTURES. NO INCLUSIONS OF CLAY OR OTHER PARTICLE SIZES. (BEACH SAND?)
CAN NOT PENETRATE DEEPER THAN 8'

Sample Numbers:

Additional Information:

MACTEC

MACTEC Engineering and Consulting, Inc.
90 Digital Drive
Novato, CA 94949

231TP103

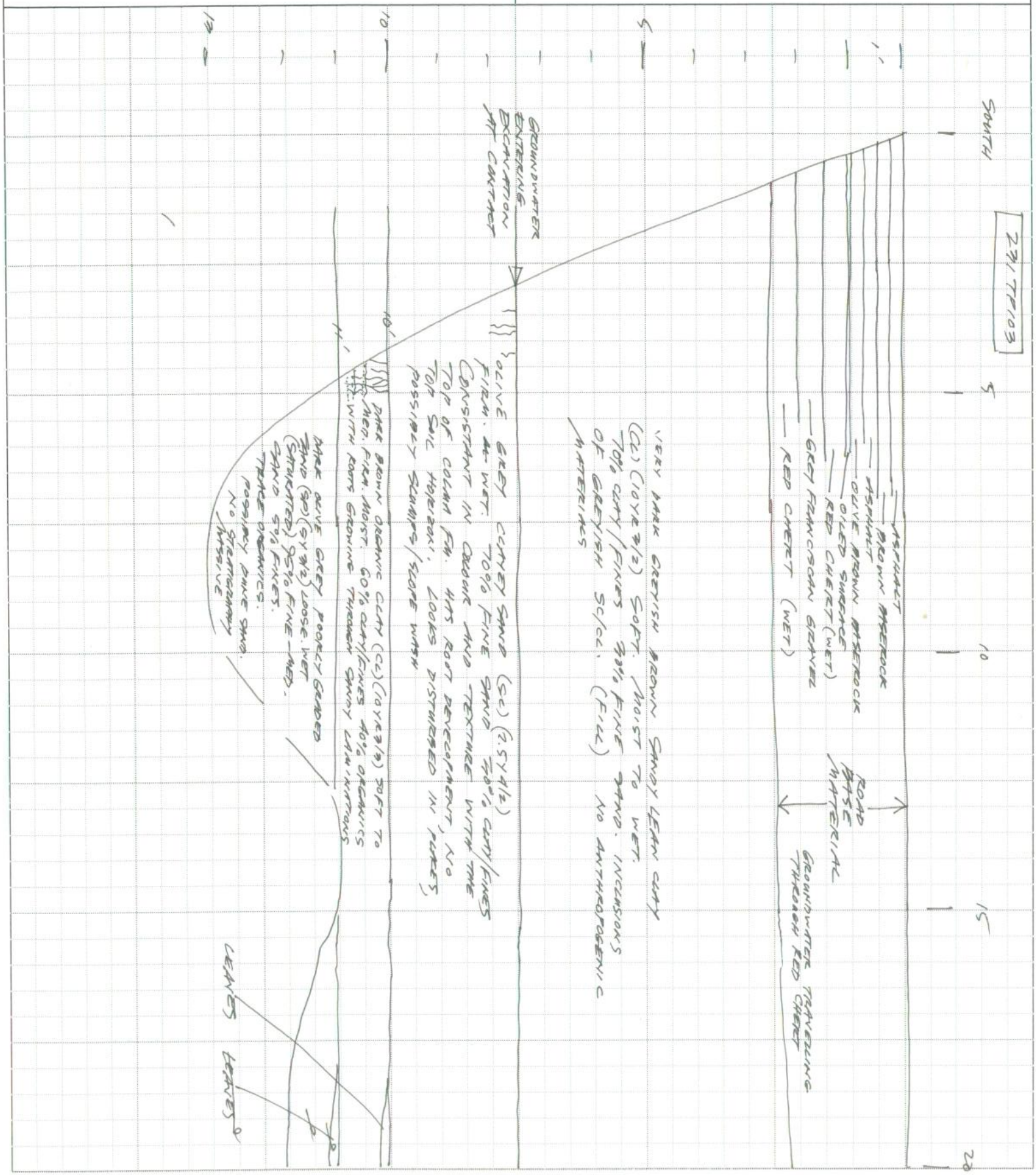
JOB NO. 4089041001.109 SHEET 1 OF 2

PHASE _____ TASK _____

JOB NAME PRESIDIO SF - 207/231

BY A H HENKE DATE 1/25/06

CHECKED BY _____ DATE _____



MACTEC

MACTEC Engineering and Consulting, Inc.
90 Digital Drive
Novato, CA 94949

231 TP 103

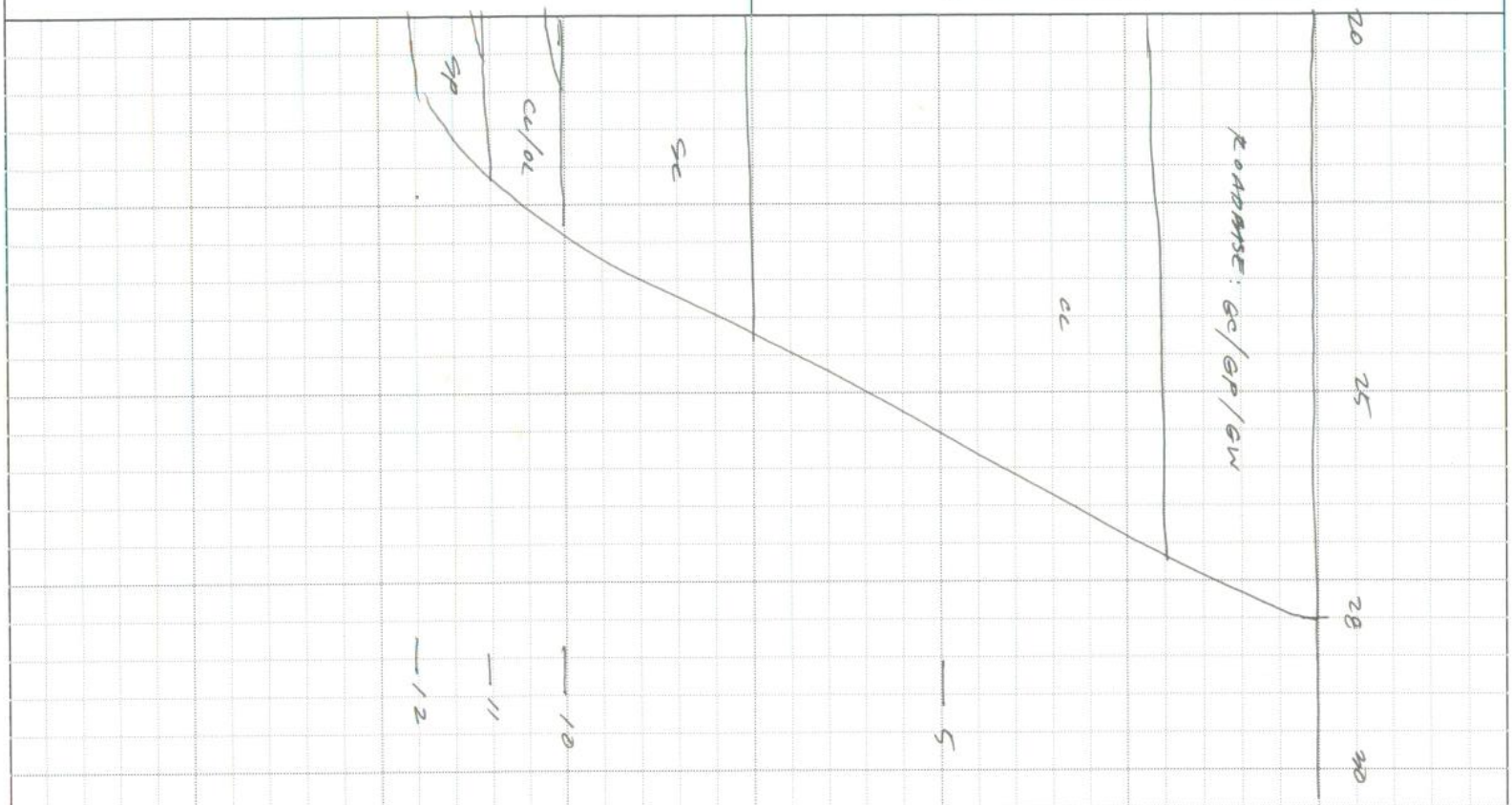
JOB NO. 4089041001.109 SHEET 2 OF 2

PHASE 231, TP 103 TASK

JOB NAME PRES. SF. 207/231

BY A. HENKE DATE

CHECKED BY DATE



MACTEC

MACTEC Engineering and Consulting, Inc.
90 Digital Drive
Novato, CA 94949

2ITF101

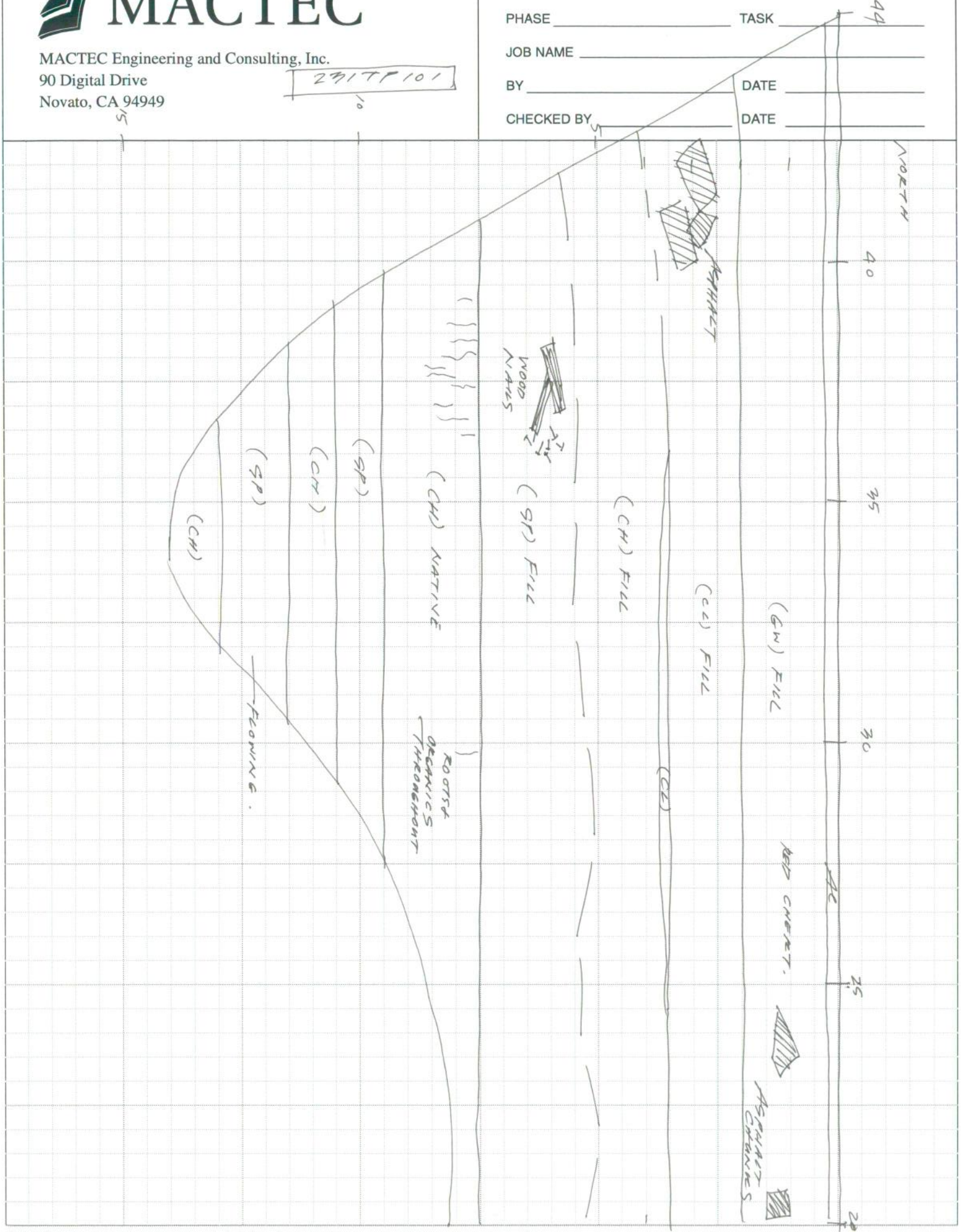
JOB NO. _____ SHEET 2 OF 2

PHASE _____ TASK _____

JOB NAME _____

BY _____ DATE _____

CHECKED BY _____ DATE _____



MACTEC

MACTEC Engineering and Consulting, Inc.
90 Digital Drive
Novato, CA 94949

231TP101

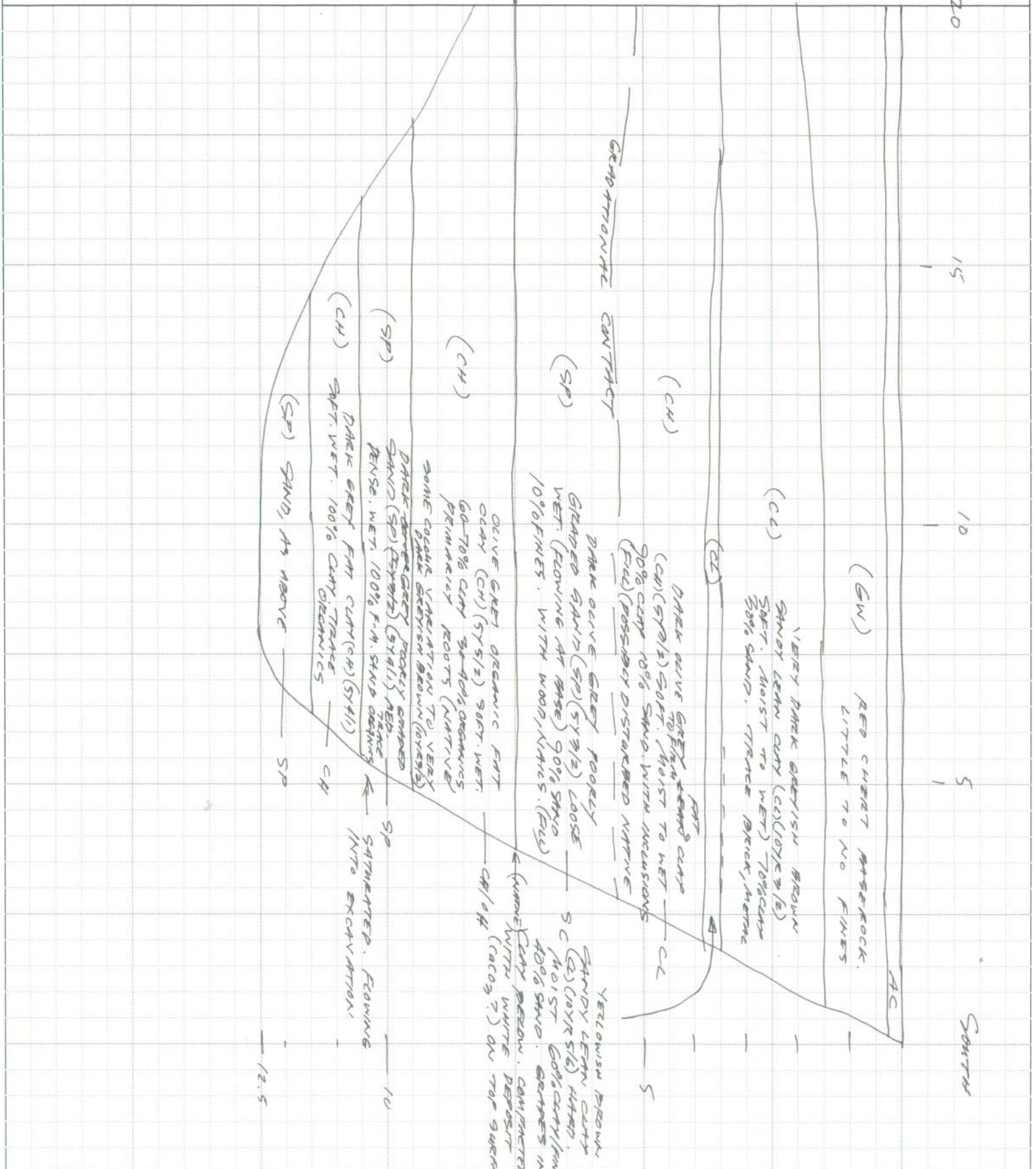
JOB NO. 40890\1001.109 SHEET 1 OF 2

PHASE _____ TASK _____

JOB NAME PRESIDIO 9F - 207/231

BY A H HENKE DATE 1/26/06

CHECKED BY _____ DATE _____



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MACTEC Engineering and Consulting, Inc.
90 Digital Drive
Novato, CA 94949

231 TP 100

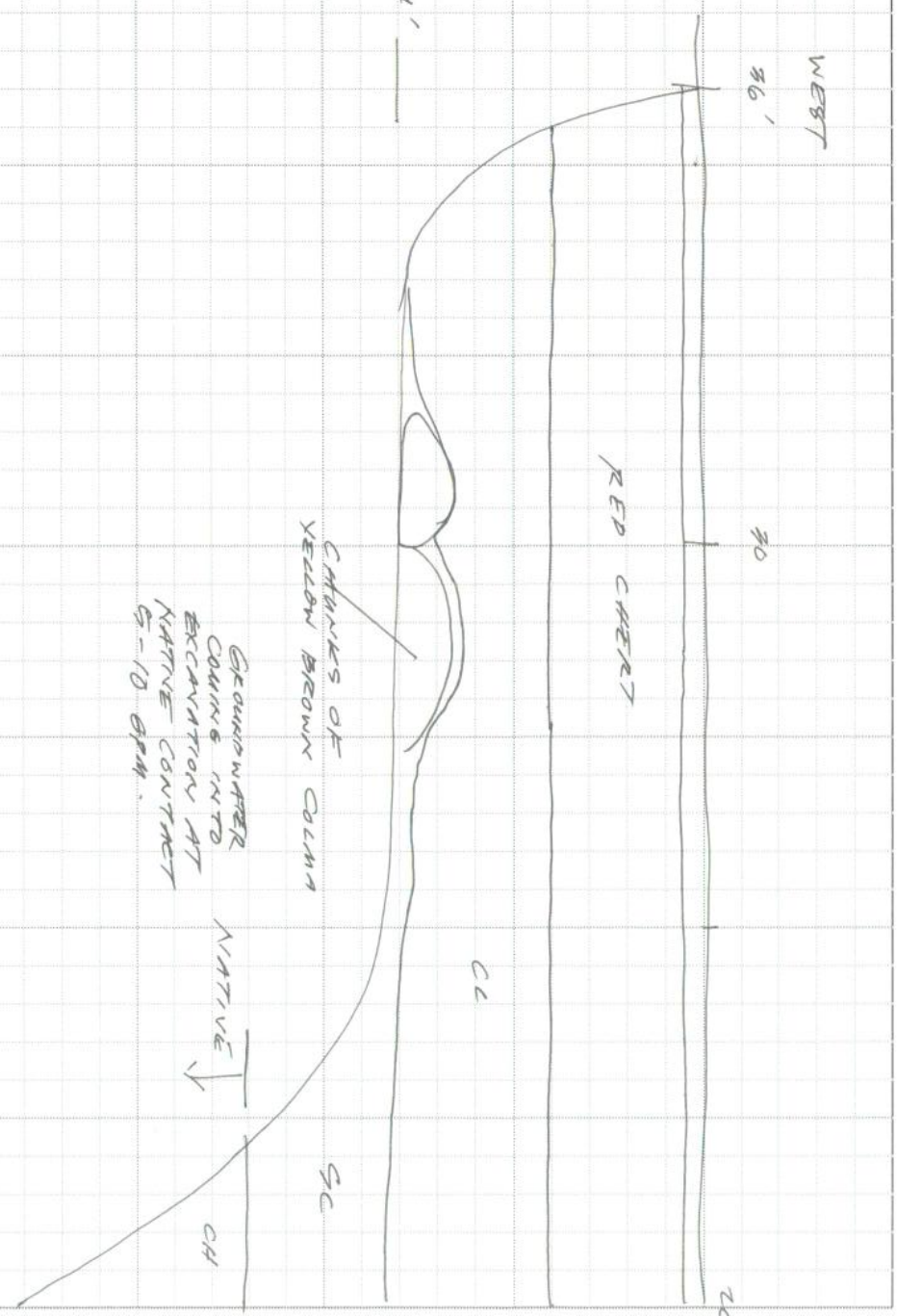
JOB NO. _____ SHEET 2 OF 2

PHASE _____ TASK _____

JOB NAME _____

BY _____ DATE _____

CHECKED BY _____ DATE _____



MACTEC

MACTEC Engineering and Consulting, Inc.
90 Digital Drive
Novato, CA 94949

Z31TP100

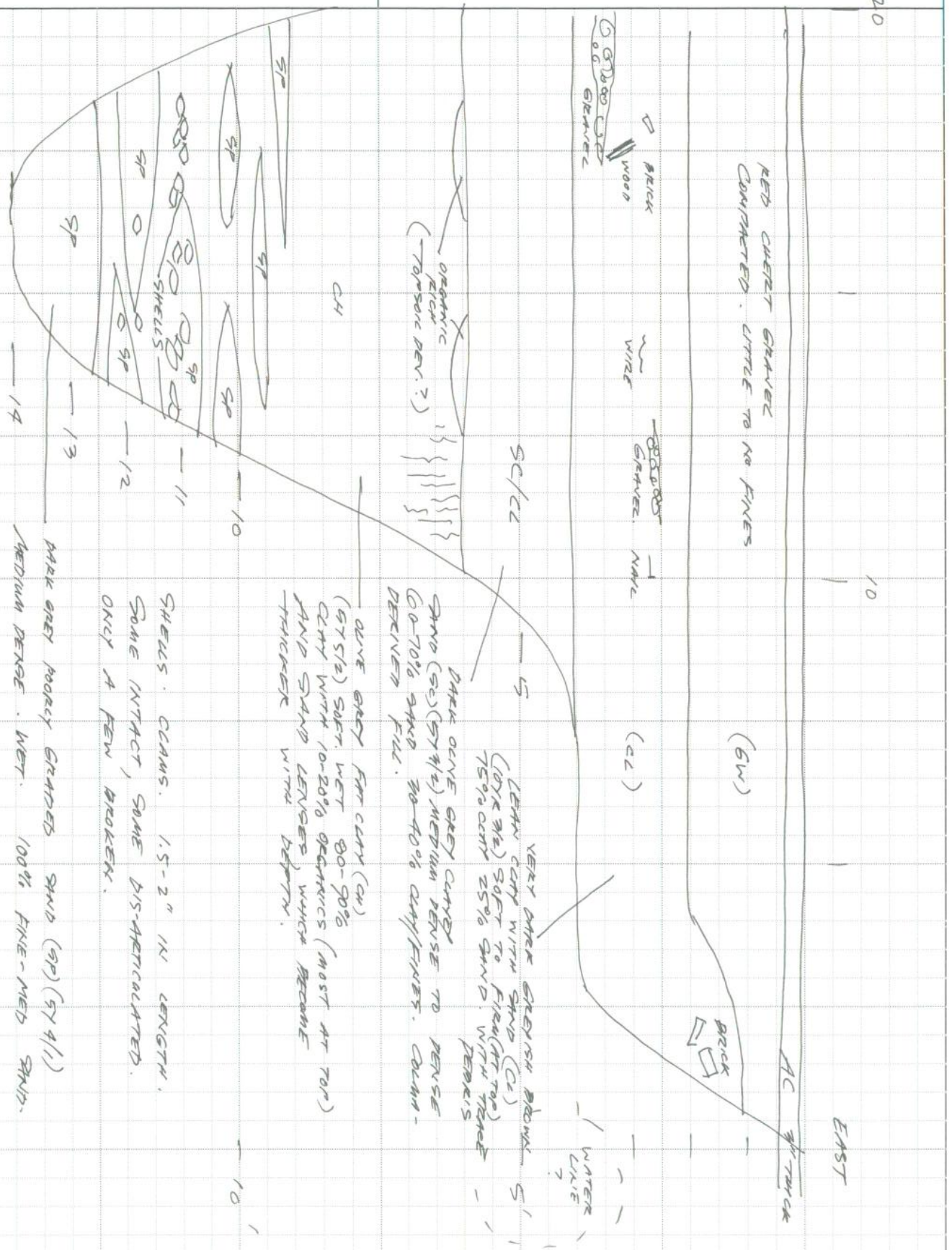
JOB NO. 408904 1001 . 109 SHEET 1 OF 2

PHASE _____ TASK _____

JOB NAME PRESIDIO SF 201/231

BY AH HENKE DATE _____

CHECKED BY _____ DATE _____



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Novato, CA 94949

231TP102

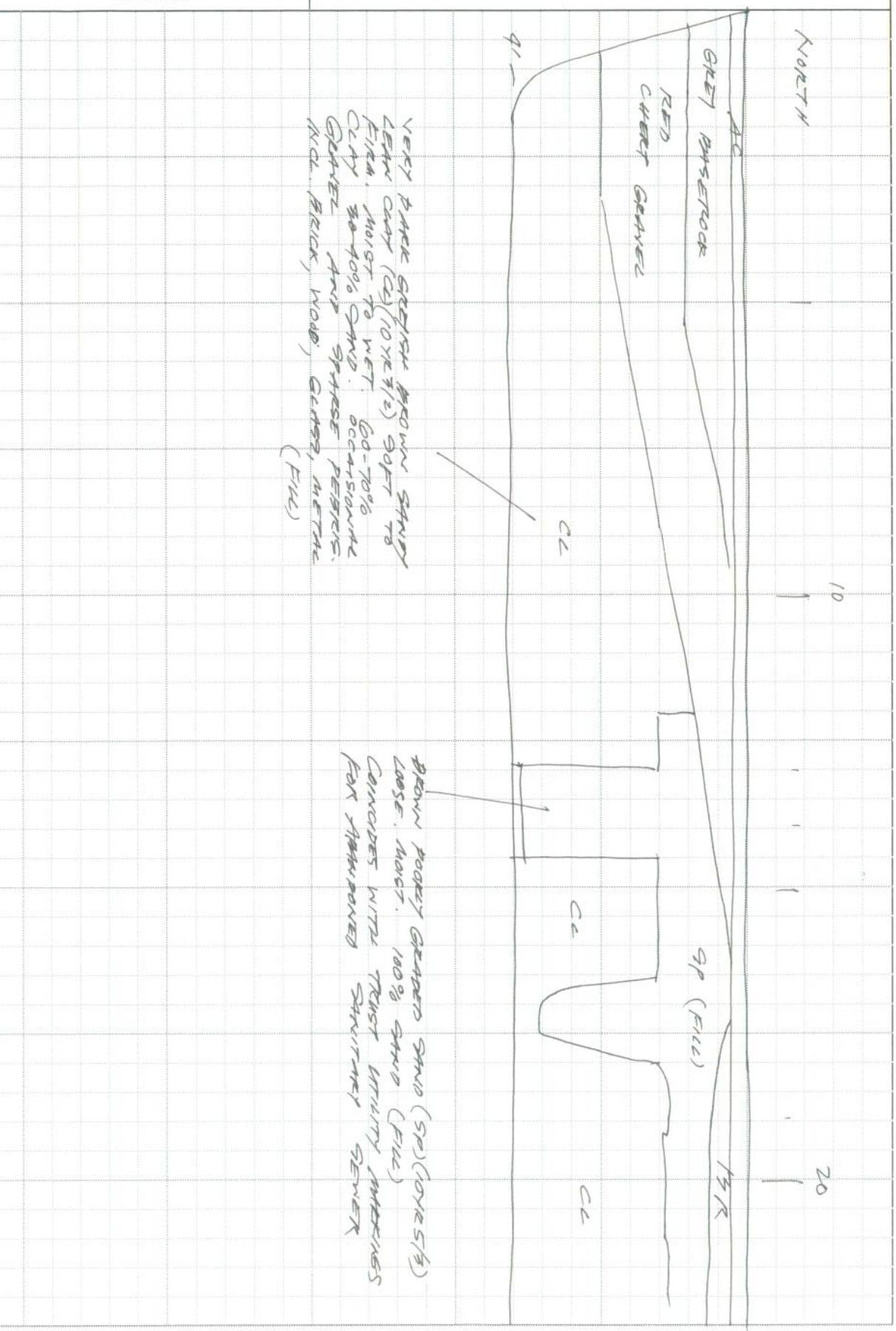
JOB NO. 4089041001.109 SHEET 1 OF 3

PHASE _____ TASK _____

JOB NAME PRESIDIO SF 207/231

BY A. HENKE DATE _____

CHECKED BY _____ DATE _____



MACTEC

MACTEC Engineering and Consulting, Inc.
90 Digital Drive
Novato, CA 94949

Z31TP102

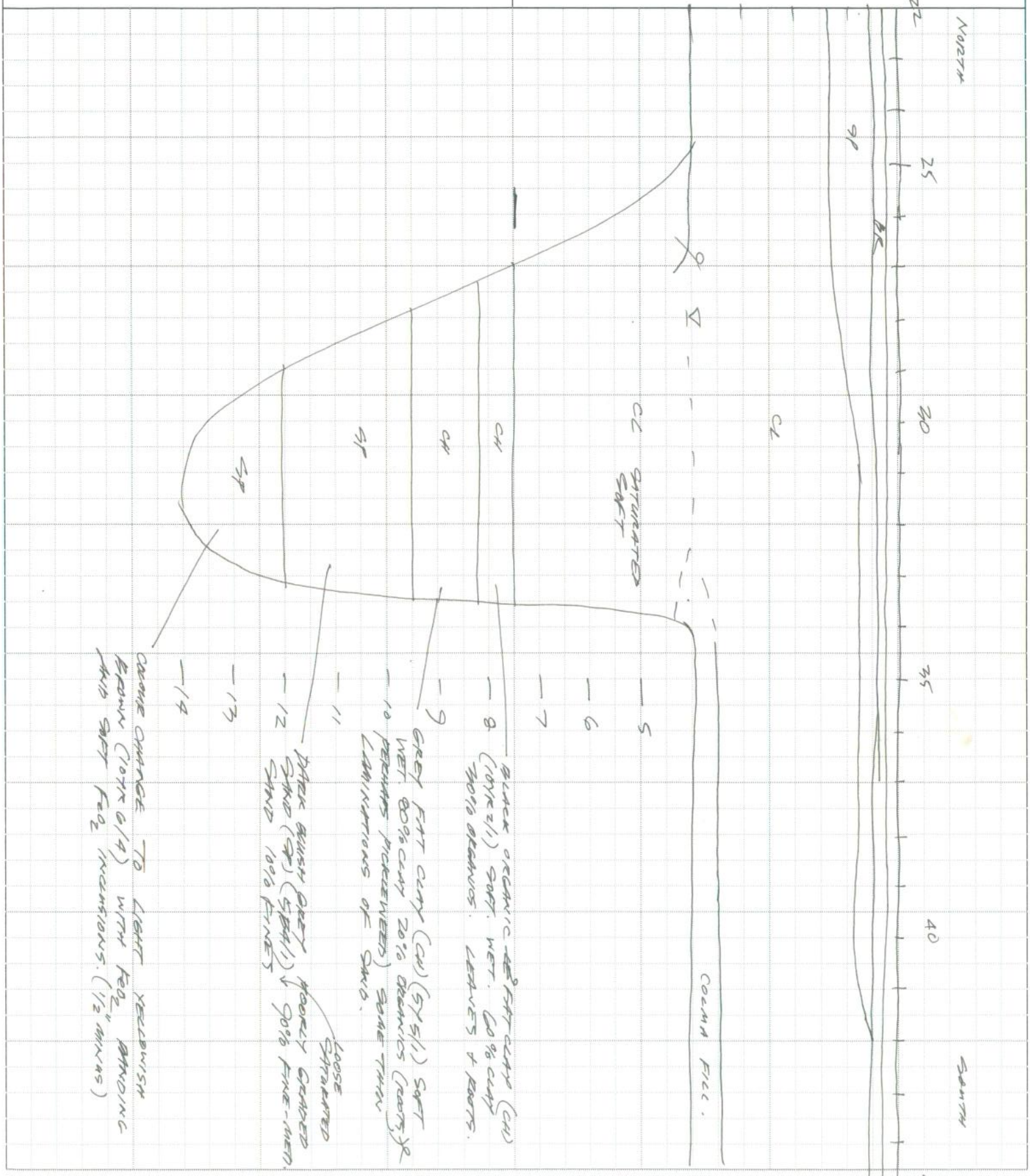
JOB NO. _____ SHEET 2 OF 3

PHASE _____ TASK _____

JOB NAME _____

BY _____ DATE _____

CHECKED BY _____ DATE _____



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Novato, CA 94949

231TP102

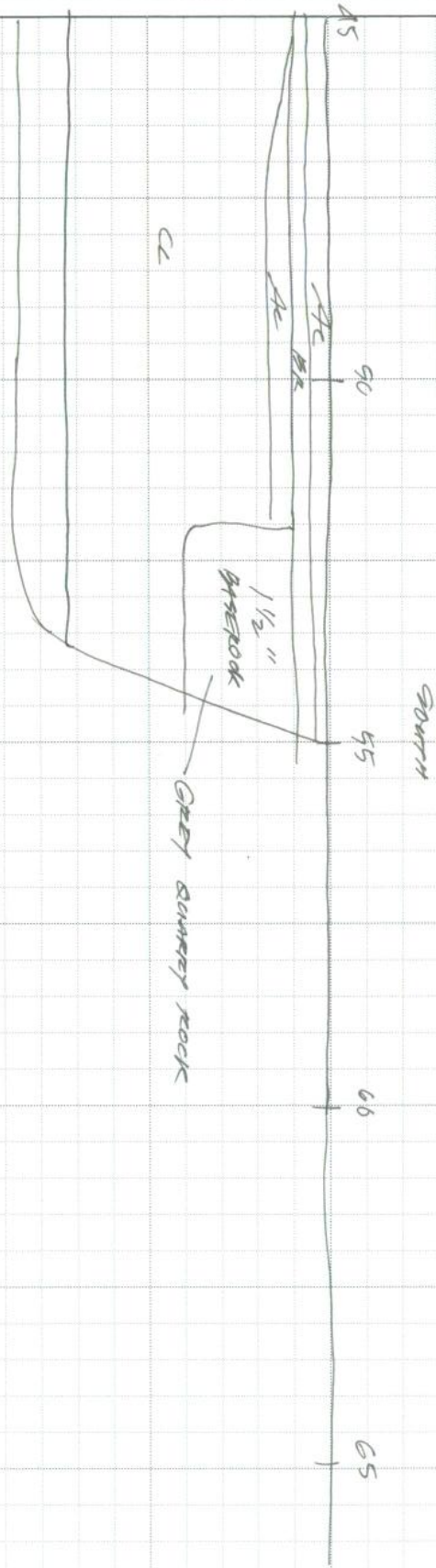
JOB NO. _____ SHEET 3 OF 3

PHASE _____ TASK _____

JOB NAME _____

BY _____ DATE _____

CHECKED BY _____ DATE _____



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5341 Old Redwood Highway, Suite 300
Petaluma, CA 94954

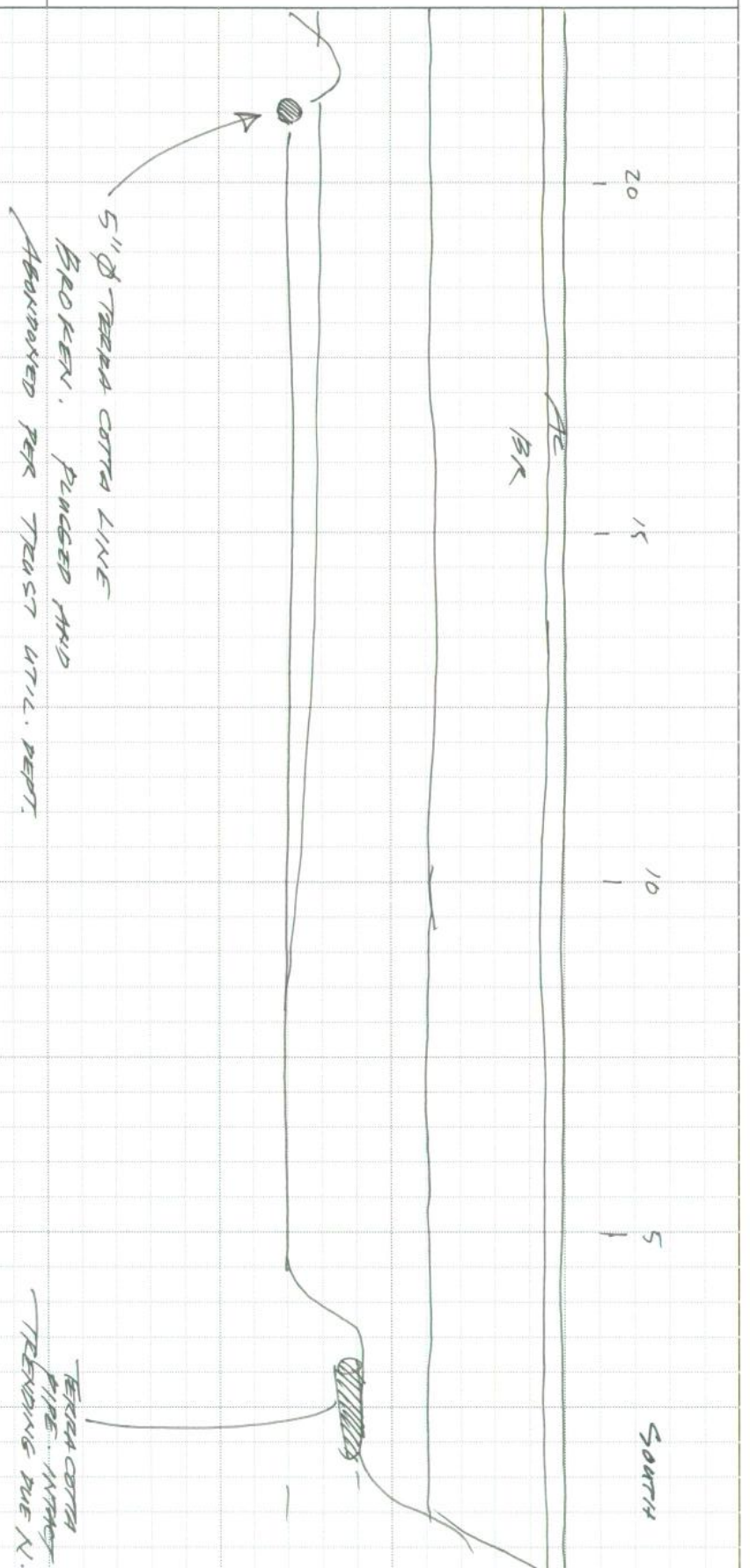
JOB NO. 408904 1001.109 SHEET 1 OF 3

PHASE _____ TASK _____

JOB NAME PRESIDIO SF 207/231

BY A H HENKE DATE 1/27/06

CHECKED BY _____ DATE _____



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Petaluma, CA 94954

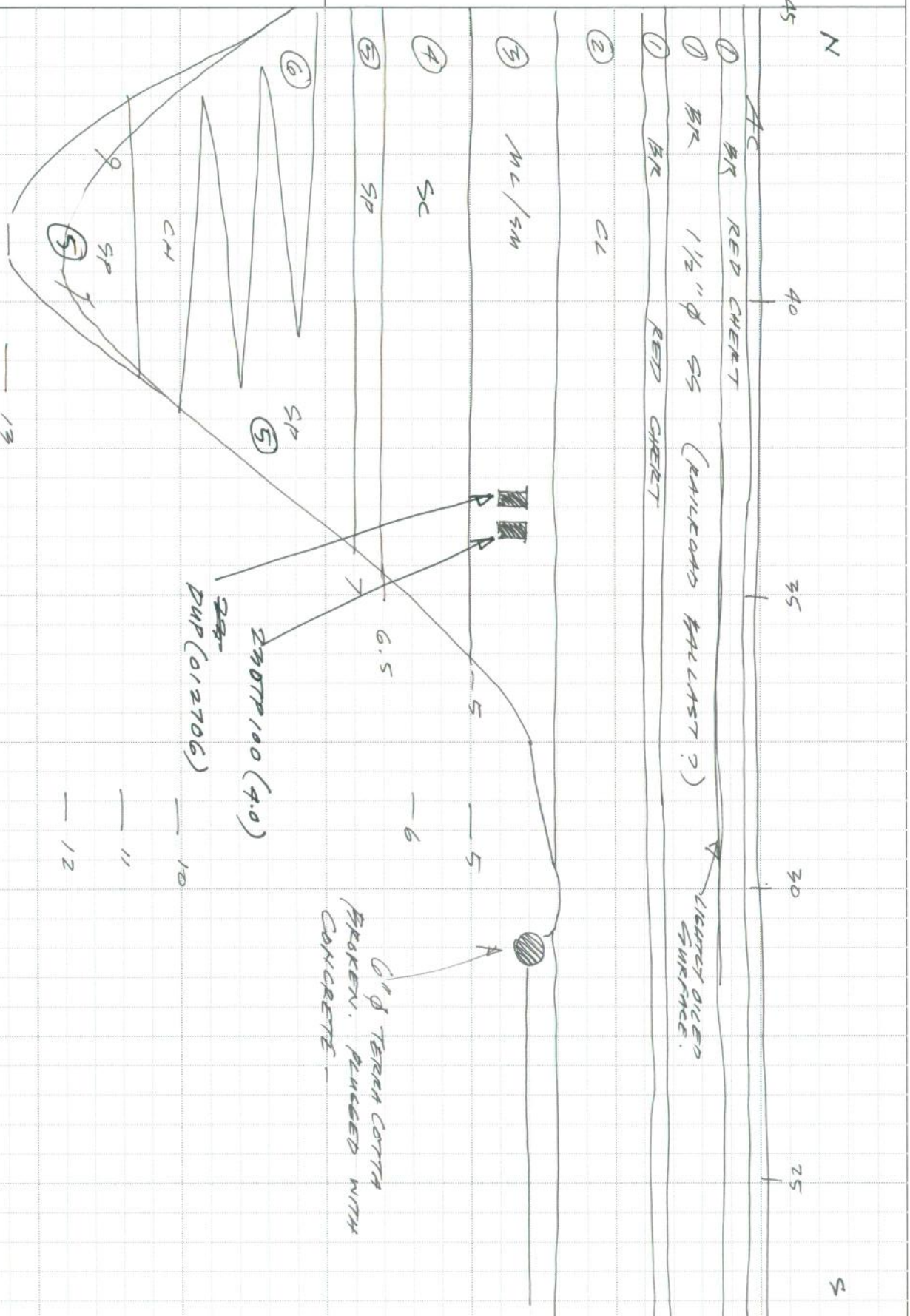
JOB NO. _____ SHEET 2 OF 3

PHASE _____ TASK _____

JOB NAME _____

BY _____ DATE _____

CHECKED BY _____ DATE _____



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MACTEC Engineering and Consulting, Inc.
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Petaluma, CA 94954

JOB NO. _____ SHEET 3 OF 3

PHASE _____ TASK _____

JOB NAME _____

BY _____ DATE _____

CHECKED BY _____ DATE _____

SURFACE NORTH.

50

AC

BR

(DR DISTURBED NATIVE?)

① BEDROCK. RED CHERT GRAVEL AT TOP (2 6" THICK), THEN 1' OF 1½" Ø LT. BROWN SANDSTONE GRAVEL. (LOOKS LIKE RAILROAD BALLAST. THEN 6" LAYER OF RED CHERT. (FILL)

② VERY DARK GREYISH BROWN SANDY LEAN CLAY (CL) (10YR 3/2) SOFT TO FIRM. (MORE COMPACT AT SURFACE) MOIST TO WET. 60-80% CLAY 20-40% SAND. GENERALLY 4 — SANDIER AT BASE. (FILL)

③ OLIVE SILTY SAND (SM) (5Y4/3) MEDIUM DENSE. MOIST TO WET. 60-80% FINE SAND 20-40% SILT (COLMA-DERIVED FILL. HIGHLY REDUCED)

④ DARK OLIVE GREY CLAYEY SAND (SC) (5Y 3/2) SOFT WET. 60% FINE SAND 75% CLAY/FINES 5% GRAVEL (FILL)

⑤ DARK GREY POORLY GRADED SAND (SP) (5Y4/1) LOOSE TO MEDIUM DENSE. WET. 90% SAND 10% SILT/FINES RIO SHELL (NATIVE)

⑥ DARK GREY FAT CLAY (CH) (5Y4/1) SOFT. WET. 90% CLAY (10% ORGANICS. DISCONTINUOUS LAYERS WITHIN SAND ⑤. (NATIVE)

MACTEC

5341 Old Redwood Highway
Suite 300
Petaluma, CA 94954
(707) 793-3800

CHAIN OF CUSTODY FORM

Seq. No.: № 1462

Samplers: A. HEINKE

Lab: CHRIS TOMPKINS

Job Number: 408704.1001.107

Name/Location: PRESIDIO SF - BLDG 231/207

Project Manager: M.A. JACOBVITZ Recorder: _____ (Signature Required)

MATRIX: Soil	MATRIX: Air	# CONTAINERS & PRESERV.: Unpres.	H2SO4	HNO3	HCL	SAMPLE NUMBER: YR	SEQ	DATE: YR	MO	DAY	TIME	STATION DESCRIPTION	DEPTH	ANALYSIS REQUESTED: EPA 8270 SIM (PAH)	EPA 8260 (VOC)	EPA 8015 (TPH-G)	EPA 8015 (TPH-D, FO SGC)	EPA 8081 (TEST ANTISOL)	EPA 8082 (PCB)
✓		1				207	TP100(5.0)	06	01	23	1330	207 TP100	5.0-5.5	✓	✓	✓	✓	✓	✓
✓		1				207	TP100(9.5)	06	01	23	1340	↳	9.5-10.0	✓	✓	✓	✓	✓	✓

ADDITIONAL INFORMATION

SAMPLE NUMBER: YR	SEQ	TURNAROUND TIME/ REMARKS
		☐ STANDARD TAT
		☐ RESULTS TO S. SABOL
		ssabol@mactec.com
		(510) 628 3712
		☐ TPH-D (C12-24) TPH-FO (C24-C36)
		TPH-G (C7-C12)
		AH

CHAIN OF CUSTODY RECORD

A. HEINKE MACTEC 1/24/06 1015

Relinquished By (Signature)	(Print Name)	(Company)	Date/Time
[signature]	Tony Rojas	C&T	1/24/06 14:15
Received By (Signature)	(Print Name)	(Company)	Date/Time
Relinquished By (Signature)	(Print Name)	(Company)	Date/Time
Received By (Signature)	(Print Name)	(Company)	Date/Time
Relinquished By (Signature)	(Print Name)	(Company)	Date/Time
Received By (Signature)	(Print Name)	(Company)	Date/Time

Method of Shipment: C7 COURIER

MACTEC

5341 Old Redwood Highway
Suite 300
Petaluma, CA 94954
(707) 793-3800

CHAIN OF CUSTODY FORM

Seq. No.: № 1463

Samplers: A. HOPKE

Lab: CURTIS TOMPKINS

Job Number: 1069041000.109

Name/Location: TESORO SF 207231

Project Manager: ALAN JACOBVITZ

Recorder: (Signature Required)

MATRIX			# CONTAINERS & PRESERV.					SAMPLE NUMBER		DATE				STATION DESCRIPTION		ANALYSIS REQUESTED
Soil	Air		Unpres.	H2SO4	HNO3	HCL		YR	SEQ	YR	MO	DAY	TIME		DEPTH	
✓			1					2	7 0 7 1 0	0 6	0 1	2 7	0 8 4 5	230TP100@4.5	4.5/4.5 D	✓ ✓ - - - ✓ ✓
✓			1					2	7 0 7 1 0							
✓			1					2	7 0 7 1 0	0 6	0 1	2 7	0 8 5 0	230TP100@4-4.5-DUP		✓ ✓ - - - - -
								2	7 0 7 1 0	0 6	0 1	2 7	0 9 7 0	TB		✓ ✓

ADDITIONAL INFORMATION

SAMPLE NUMBER		TURNAROUND TIME/ REMARKS
YR	SEQ	
		STANDARD TAT
		RESULTS TO C.A. SADOL
		(510) 628 62 12

CHAIN OF CUSTODY RECORD

Relinquished By (Signature)	(Print Name)	(Company)	Date/Time
[signature]	Tony Rojas	MACTEC	1125
Received By (Signature)	(Print Name)	(Company)	Date/Time
Relinquished By (Signature)	(Print Name)	(Company)	Date/Time
Received By (Signature)	(Print Name)	(Company)	Date/Time
Relinquished By (Signature)	(Print Name)	(Company)	Date/Time
Received By (Signature)	(Print Name)	(Company)	Date/Time
Method of Shipment:			

FTL-F1008-B (5/04)

Laboratory Copy (White) Project Office Copy (Yellow) Field or Office Copy (Pink)

ATTACHMENT E

TRENCH EXCAVATION, BACKFILL AND OFFSITE SOIL DISPOSAL RECORDS

A description of trench excavation, dewatering, and backfilling activities performed by the Trust's subcontractor, Environmental Remediation/Resources Group, Inc. (ERRG) is summarized below, followed by related forms and records of soil sampling and disposal activities.

- ERRG mobilized to the site for archaeological trenching on January 23, 2006.

- Trenching activities (excavation) were conducted in 9 areas from January 23 to January 27, 2006.

- During trenching activities, surface water from rain events and groundwater collected in the trenches and pumping was taking place at the surface in 7 of 9 of the trenches that were excavated in asphalt-paved areas. Approximately 50 to 100 gallons of dewatering fluids were collected from the trenches in a 500-gallon water tote, and were not sampled prior to being transported to the Building 649 firing range site at the Presidio where ERRG was conducting remedial activities. Prior to mixing the dewatering fluids from the Building 207/231 Area trenches in with approximately 850 gallons of water stored in a 1500-gallon HDPE holding tank at the site with additional capacity, the water from Building 649 remedial activities was sampled in accordance with the Abatement report protocols for that site. The manifest and analytical results are included in this attachment. Soil identified in Trench 207TP100 identified as potential LTTD-treated soils were managed in compliance with the Low Temperature Thermal Desorption-Treated Soil Tracking and Management Plan (Plan) and requirements of RWQCB Order R2-2003-0080 (Order). In accordance with the *Low Temperature Thermal Desorption-Treated Soil Tracking and Management Plan* (Plan; *EKI, 2004*) and requirements of RWQCB Order R2-2003-0080 (Order), the Trust was notified of the presence of the materials (soils, geotextile fabric and gravel) that indicated LTTD soils were present. As indicated on the trench log in Figure A-2 that shows the vertical excavation in this area only extended approximately 1-foot into the ¾-inch drain rock, upon identification of the LTTD backfill area, excavation in this portion of the trench was discontinued. The gravel and LTTD soils were placed back into the excavation in accordance with the Plan, and the overlying 1.75 feet of sands were replaced as top soil. The trench location was logged using GPS for tracking purposes in accordance with the Plan. Based on field observations, the soils encountered below approximately 1.75 feet bgs did not appear to match the description of standard LTTD soils (dark grey granular material with low organic content). However, two soil samples were collected from within the trench (as shown on Plate 1 and Figure A-2, and presented in Table 1) to further characterize the soil within the Saltwater and Freshwater Ecological Protection Zone in accordance with the Plan. Upon identification of the LTTD backfill area within Trench 207 TP100, excavation in this portion of the trench was discontinued. The LTTD soils were placed back into the excavation in accordance with the Plan, and the overlying 1.75 feet of sands were replaced as top soil. Therefore, LTTD soils or other materials from Trench 207TP100 were not managed with stockpiled materials from other trenches discussed herein.

- ERRG determined excavated soils were too saturated with groundwater to be reused for backfilling the excavated trenches and could not be compacted adequately to provide an acceptable surface for repaving with asphalt in seven of the nine trenches.

- The Trust directed ERRG to remove the necessary amount of soil from these seven trenches to allow proper backfilling for re-asphalting the surfaces, and procure sufficient dry imported fill material to backfill the trenches.

ERRG remobilized to the site on February 6, 2006.

- ERRG sampled the stockpiled excavated soil at the site in an area under the Doyle Drive overpass for offsite disposal waste profiling on February 8, 2006, by collecting a four-point field composite sample. Each part of the composite was collected in a separate quadrant of the stockpile from about 12 inches into the stockpile, the four composite samples were mixed, and the sample was placed in a stainless steel tube and manifested for laboratory analysis; this method deviated from the QAAP protocols for stockpile sampling in that the composite was prepared in the field rather than by the laboratory. In addition, the sample number selected did not follow Trust protocols for identifying it as a stockpile sample. The manifest and analytical results are included in this attachment.

- ERRG imported 208 tons of drain rock and aggregate baserock backfill material and backfilled and compacted trenches in paved areas. The drain rock was from a virgin source at Pilarcitos Quarry in Half Moon Bay, California, and the aggregate baserock was from a virgin source at Vista Quarry in Fremont, California—these are quarry locations that have been previously approved by the Trust for use at other sites at the Presidio. However, ERRG has been unable to locate documentation of analytical results for samples of this material to verify it was not contaminated. Under the corrective actions that will be implemented at the Site, these materials will be excavated in conjunction with contaminated soils and transported and disposed offsite.

- Repaved the finished trenches between February 9 and 10, 2006.

- Completed restoration of the site on February 10, 2006.

- ERRG loaded 214 tons of stockpiled soil into end-dump trucks and transported soil to Altamont Landfill for disposal as Class II Alternate Daily Cover between March 17 and 20, 2006. The manifest and analytical results are included in this attachment.

ANALYTICAL REPORT

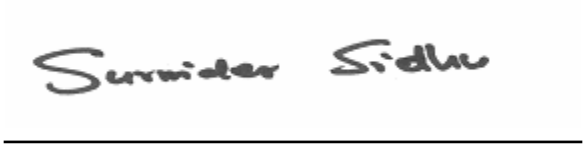
Job Number: 720-1988-2

Job Description: PT-Archeo

For:

ERRG
185 Mason Circle, Ste A
Concord, CA 94520

Attention: Tyson Appel



Surinder Sidhu
Project Manager I
ssidhu@stl-inc.com
02/22/2006

METHOD SUMMARY

Client: ERRG Job Number: 720-1988-2

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Inductively Coupled Plasma - Atomic Emission Spectrometry	STL-SF	SW846 6010B	
Acid Digestion of Waters for Total Recoverable or	STL-SF		SW846 3005A
California WET Citrate Leach	STL-SF		CA-WET CA WET Citrate

LAB REFERENCES:

STL-SF = STL-San Francisco

METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: ERRG

Job Number: 720-1988-2

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-1988-1	PT-AO-WS01	Solid	02/08/2006 1045	02/09/2006 1650
720-1988-2	PT-TO-WS02	Solid	02/08/2006 1049	02/09/2006 1650

Client: ERRG

Job Number: 720-1988-2

Client Sample ID: PT-AO-WS01

Lab Sample ID:	720-1988-1	Date Sampled:	02/08/2006 1045
Client Matrix:	Solid	Date Received:	02/09/2006 1650

6010B Inductively Coupled Plasma - Atomic Emission Spectrometry-STLC Citrate

Method:	6010B	Analysis Batch: 720-5730		Instrument ID:	Varian ICP
Preparation:	CA WET Citrate	Prep Batch: 720-5670		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	1 g
Date Analyzed:	02/20/2006 1145			Final Weight/Volume:	1 mL
Date Prepared:	02/17/2006 1430				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	RL
Lead		2.8		0.50

Client: ERRG

Job Number: 720-1988-2

Client Sample ID: PT-TO-WS02

Lab Sample ID:	720-1988-2	Date Sampled:	02/08/2006 1049
Client Matrix:	Solid	Date Received:	02/09/2006 1650

6010B Inductively Coupled Plasma - Atomic Emission Spectrometry-STLC Citrate

Method:	6010B	Analysis Batch: 720-5730		Instrument ID:	Varian ICP
Preparation:	CA WET Citrate	Prep Batch: 720-5670		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	1 g
Date Analyzed:	02/20/2006 1156			Final Weight/Volume:	1 mL
Date Prepared:	02/17/2006 1430				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	RL
Lead		3.9		0.50

Client: ERRG Job Number: 720-1988-2

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
Metals				
Prep Batch: 720-5670				
LCS 720-5670/2-B	Lab Control Spike	Solid	CA WET Citrate	
LCSD 720-5670/3-B	Lab Control Spike Duplicate	Solid	CA WET Citrate	
MB 720-5670/1-B	Method Blank	Solid	CA WET Citrate	
720-1988-1	PT-AO-WS01	Solid	CA WET Citrate	
720-1988-1MS	Matrix Spike	Solid	CA WET Citrate	
720-1988-1MSD	Matrix Spike Duplicate	Solid	CA WET Citrate	
720-1988-2	PT-TO-WS02	Solid	CA WET Citrate	
Analysis Batch:720-5730				
LCS 720-5670/2-B	Lab Control Spike	Solid	6010B	720-5670
LCSD 720-5670/3-B	Lab Control Spike Duplicate	Solid	6010B	720-5670
MB 720-5670/1-B	Method Blank	Solid	6010B	720-5670
720-1988-1	PT-AO-WS01	Solid	6010B	720-5670
720-1988-1MS	Matrix Spike	Solid	6010B	720-5670
720-1988-1MSD	Matrix Spike Duplicate	Solid	6010B	720-5670
720-1988-2	PT-TO-WS02	Solid	6010B	720-5670

Client: ERRG

Job Number: 720-1988-2

Method Blank - Batch: 720-5670

Method: 6010B
Preparation: CA WET Citrate
STLC Citrate

Lab Sample ID: MB 720-5670/1-B
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 02/20/2006 1128
Date Prepared: 02/17/2006 1430

Analysis Batch: 720-5730
Prep Batch: 720-5670
Units: mg/L

Instrument ID: Varian ICP
Lab File ID: N/A
Initial Weight/Volume: 1 g
Final Weight/Volume: 1 mL

Analyte	Result	Qual	RL
Lead	ND		0.50

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 720-5670

Method: 6010B
Preparation: CA WET Citrate
STLC Citrate

LCS Lab Sample ID: LCS 720-5670/2-B
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 02/20/2006 1132
Date Prepared: 02/17/2006 1430

Analysis Batch: 720-5730
Prep Batch: 720-5670
Units: mg/L

Instrument ID: Varian ICP
Lab File ID: N/A
Initial Weight/Volume: 1 g
Final Weight/Volume: 1 mL

LCSD Lab Sample ID: LCSD 720-5670/3-B
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 02/20/2006 1135
Date Prepared: 02/17/2006 1430

Analysis Batch: 720-5730
Prep Batch: 720-5670
Units: mg/L

Instrument ID: Varian ICP
Lab File ID: N/A
Initial Weight/Volume: 1 g
Final Weight/Volume: 1 mL

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Lead	100	100	80 - 120	0	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: ERRG

Job Number: 720-1988-2

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-5670

Method: 6010B
Preparation: CA WET Citrate
STLC Citrate

MS Lab Sample ID:	720-1988-1	Analysis Batch:	720-5730	Instrument ID:	Varian ICP
Client Matrix:	Solid	Prep Batch:	720-5670	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	1 g
Date Analyzed:	02/20/2006 1149			Final Weight/Volume:	1 mL
Date Prepared:	02/17/2006 1430				

MSD Lab Sample ID:	720-1988-1	Analysis Batch:	720-5730	Instrument ID:	Varian ICP
Client Matrix:	Solid	Prep Batch:	720-5670	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	1 g
Date Analyzed:	02/20/2006 1152			Final Weight/Volume:	1 mL
Date Prepared:	02/17/2006 1430				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Lead	97	100	80 - 120	2	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

SAMPLE STATUS CHANGE FORM

TRENT SERVICES
STL San Francisco

Change request received by: JC Date Requested: 02\16\06

720-1988 - Job 2

Submission #	Client Sample ID	Old Status Description	Description of Changes	Requested By (Client's Name)
Proj #1091 720-1988	PT-AO-WS01 PT-TO-WS02		Add STLC lead only	Tyson
			DUE 21 02\16\06	RUSH 72 HRS

RUSH

Changes were done in LIMS by (login): _____ On: ____________

CC: ___Lab Director ___Team Leader ___Analyst ___Proj. Manager

forms\sample control\smpstatusch 2002.doc

LOGIN SAMPLE RECEIPT CHECK LIST

Client: ERRG

Job Number: 720-1988-2

Login Number: 1988

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

CHAIN OF CUSTODY

5916-7

720-1988

Laboratory: STL
Contact: Steven
Phone: (925) 484-1919

Date: 2/9/06
Page: 1
of: 1

185 Mason Circle, Suite A
Concord, CA 94520
Phone: (925) 969-0750

ERRG

Project Manager: Tyson Appel
Project Name: PT ARCHO
E-mail Results to: Tyson Appel tappel@errg.net
Samplers: Tyson Appel
Project #: 26-007
P.O.#:
Turn Around Time: (5 Day) 48Hr. 24Hr. Other:

Sample ID	Lab ID	Date/Time	Matrix	Preserv.	TPH Gasoline/BTEX (EPA 5030/8015/602/8020)	TPH Diesel (EPA 3510/3550/8015)	TEPH Extension/Diesel/Motor Oil (EPA 3510/3550/8015)	Purgeable Aromatics/BTEX (EPA 602/8020)	Purgeable Halocarbons (EPA 601/8010)	Volatile Organics (EPA 624/8240)	Semivolatile Organics (EPA 525/625/8270/525)	TOG (SM5520) TRPH (EPA 418.1)	Title 22 Metals Total or Soluble	Soluble Extraction (TCLP or STLC (WET))	Mercury 7040	Total Lead	5 Hall	TPH(D)	8015	Number of Containers
PT-AD WSO1		2/8 - 1045	Soil	4°												X	X		X	1
PT-TC-WSO2		2/8 - 1049	Soil	4°												X	X			1

Email Results at tappel@errg.net

TWO SAP REPORTS

Relinquished by (Sampler)	Relinquished by (Sampler)	Relinquished by (Sampler)
(Signature) (Time) TSA 1021	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date) ERRG	(Printed Name) (Date) 02-09-06	(Printed Name) (Date)
(Company) Received By:	(Company) Received By: 1650	(Company) Received By:
(Signature) (Time) 02-09-06 1550	(Signature) (Time) 2/9/06	(Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date) STL SF	(Printed Name) (Date)
(Company) STL SF	(Company)	(Company)

Total # Containers: 2

Head Space Y/N

Received in Good Condition (Cold)? Y/N OC

Conforms to Record? Y/N Y

I:\FORMS\CHAIN OF CUSTODY

ALTAMONT LANDFILL & RRF
INBOUND PROFILE REPORT
01/02/2006 to 03/24/2006

PROFILE: 55354000 ONLY

PROFILE: 55354000

TICKET	DATE	TIME IN	TRUCK	UNIT	NUMBER OF UNITS	TONS
601108	3/17/2006	10:45	C1	Tons	0.00	22.87
601113	3/17/2006	10:51	C1	Tons	0.00	25.27
601155	3/17/2006	15:01	C1	Tons	0.00	25.52
601156	3/17/2006	15:12	C1	Tons	0.00	22.98
601225	3/20/2006	07:54	C1	Tons	0.00	24.22
601233	3/20/2006	08:19	C1	Tons	0.00	22.92
601315	3/20/2006	13:09	C1	Tons	0.00	25.52
601316	3/20/2006	13:12	C1	Tons	0.00	21.63
601342	3/20/2006	17:38	C1	Tons	0.00	22.96

TOTAL: 55354000 **Loads: 9** **213.89**

GRAND TOTALS **Tickets: 9** **Loads: 9**

ANALYTICAL REPORT

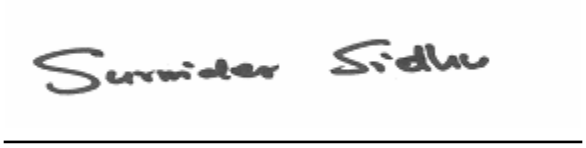
Job Number: 720-1749-1

Job Description: Building 649 Firing Range

For:

ERRG
185 Mason Circle, Ste A
Concord, CA 94520

Attention: Tyson Appel



Surinder Sidhu
Project Manager I
ssidhu@stl-inc.com
01/31/2006

METHOD SUMMARY

Client: ERRG Job Number: 720-1749-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Inductively Coupled Plasma - Atomic Emission Spectrometry	STL-SF	SW846 6010B	
Acid Digestion of Aqueous Samples and Extracts	STL-SF		SW846 3010A

LAB REFERENCES:

STL-SF = STL-San Francisco

METHOD REFERENCES:

SW846 - "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

SAMPLE SUMMARY

Client: ERRG

Job Number: 720-1749-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-1749-1	PR649-012705	Water	01/27/2006 1315	01/30/2006 1730

Client: ERRG

Job Number: 720-1749-1

Client Sample ID: PR649-012705

Lab Sample ID:	720-1749-1	Date Sampled:	01/27/2006 1315
Client Matrix:	Water	Date Received:	01/30/2006 1730

6010B Inductively Coupled Plasma - Atomic Emission Spectrometry

Method:	6010B	Analysis Batch: 720-5000		Instrument ID:	Varian ICP
Preparation:	3010A	Prep Batch: 720-4992		Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	01/31/2006 1138			Final Weight/Volume:	50 mL
Date Prepared:	01/31/2006 0752				

Analyte	Result (mg/L)	Qualifier	RL
Lead	7.8		0.0050

Client: ERRG Job Number: 720-1749-1

QC Association Summary

Lab Sample ID	Client Sample ID	Client Matrix	Method	Prep Batch
Metals				
Prep Batch: 720-4992				
LCS 720-4992/2-A	Lab Control Spike	Water	3010A	
LCSD 720-4992/3-A	Lab Control Spike Duplicate	Water	3010A	
MB 720-4992/1-A	Method Blank	Water	3010A	
720-1749-1	PR649-012705	Water	3010A	
720-1749-1MS	Matrix Spike	Water	3010A	
720-1749-1MSD	Matrix Spike Duplicate	Water	3010A	
Analysis Batch:720-5000				
LCS 720-4992/2-A	Lab Control Spike	Water	6010B	720-4992
LCSD 720-4992/3-A	Lab Control Spike Duplicate	Water	6010B	720-4992
MB 720-4992/1-A	Method Blank	Water	6010B	720-4992
720-1749-1	PR649-012705	Water	6010B	720-4992
720-1749-1MS	Matrix Spike	Water	6010B	720-4992
720-1749-1MSD	Matrix Spike Duplicate	Water	6010B	720-4992

Client: ERRG

Job Number: 720-1749-1

Method Blank - Batch: 720-4992

Method: 6010B
Preparation: 3010A

Lab Sample ID: MB 720-4992/1-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 01/31/2006 1121
Date Prepared: 01/31/2006 0752

Analysis Batch: 720-5000
Prep Batch: 720-4992
Units: mg/L

Instrument ID: Varian ICP
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Result	Qual	RL
Lead	ND		0.0050

Laboratory Control/
Laboratory Control Duplicate Recovery Report - Batch: 720-4992

Method: 6010B
Preparation: 3010A

LCS Lab Sample ID: LCS 720-4992/2-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 01/31/2006 1124
Date Prepared: 01/31/2006 0752

Analysis Batch: 720-5000
Prep Batch: 720-4992
Units: mg/L

Instrument ID: Varian ICP
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

LCSD Lab Sample ID: LCSD 720-4992/3-A
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 01/31/2006 1128
Date Prepared: 01/31/2006 0752

Analysis Batch: 720-5000
Prep Batch: 720-4992
Units: mg/L

Instrument ID: Varian ICP
Lab File ID: N/A
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Lead	87	87	80 - 120	0	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: ERRG

Job Number: 720-1749-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 720-4992

Method: 6010B
Preparation: 3010A

MS Lab Sample ID:	720-1749-1	Analysis Batch:	720-5000	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	720-4992	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	01/31/2006 1141			Final Weight/Volume:	50 mL
Date Prepared:	01/31/2006 0752				

MSD Lab Sample ID:	720-1749-1	Analysis Batch:	720-5000	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	720-4992	Lab File ID:	N/A
Dilution:	1.0			Initial Weight/Volume:	50 mL
Date Analyzed:	01/31/2006 1145			Final Weight/Volume:	50 mL
Date Prepared:	01/31/2006 0752				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Lead	103	106	75 - 125	0	25	4	4

Calculations are performed before rounding to avoid round-off errors in calculated results.

LOGIN SAMPLE RECEIPT CHECK LIST

Client: ERRG

Job Number: 720-1749-1

Login Number: 1749

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

05/19/06 WED 11:00 FAX 333 333 0131 CHEM WASTE MGMT INC 002

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. Form designed for use on elite (12-pitch) typewriter.

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAL000128514 Manifest Document No. 511847
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
The Presidio TRUST
34 Graham St
San Francisco CA
4. Generator's Phone (415) 561 4263

A. State Manifest Document Number 2345184 7
B. State Generator's ID
C. State Transporter's ID (Reserved)
D. Transporter's Phone 800-838-4747
E. State Transporter's ID (Reserved)
F. Transporter's Phone
G. State Facility's ID
H. Facility's Phone 559 256 9711

5. Transporter 1 Company Name: PENSKE
6. US EPA ID Number: CAD982573632
7. Transporter 2 Company Name
8. US EPA ID Number
9. Designated Facility Name and Site Address: Chem Inc, 35251 Old Skyline Rd, Lathrop, CA 94231
10. US EPA ID Number: CAT000614611

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. RQ HAZARDOUS WASTE SOLID, N.O.S., (LEAD), 9, NA3077, PGIII	001	CM	00010	Y	State 181,61 EPA/Other D008
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
ERRG# 26-012 FC 7731

K. Handling Codes for Wastes Listed Above
a. 1S03 b.
c. d.

Lic. 4P14694

15. Special Handling Instructions and Additional Information
Emergency Response #-1 800 424 9300
Site Address: 64A Masau, The Presidio, SF CA 94129
Send CD's, weight tickets, manifests TO ERRG, 185 Masau Cir Concord CA 94520

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
Nina Larssen for Presidio Trust		05	22	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
[illegible]		05	22	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
[illegible]		05	22	06

DO NOT WRITE BELOW THIS LINE.

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

GENERATOR

TRANSPORTER

FACILITY

DTSC 8022A (1/99)
EPA 8700—22

White: TSDF SENDS THIS COPY TO DTSC WITHIN 30 DAYS
To: P.O. Box 3000, Sacramento, CA 95812

WEIGHT (LB) | TIME | DATE | COMMODITY: HAZARDOUS WASTE

CROSS:

12:36 2-11-05 23620 lb 36.81 ton

TARE:

13:44 02/20/06 41020 lb 20.51 ton

NET:

YARDAGE:

DEPUTY WEIGHTMASTER

Stan Turk

Stan Turk

32600

CHEMICAL WASTE MANAGEMENT, INC.
WEIGHMASTER weighed at
35251 Old Skyline Road
Kettleman City, CA

NO: 223245

WEIGHMASTER CERTIFICATE

This is to certify that the following described commodity was weighed, measured, or counted by a WEIGHMASTER, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by CHAPTER 7 (commencing with § 12700) of Division 5 of the California Business & Professions Code, administered by the Division of Measurement Standards of California Department of Food and Agriculture.

GENERATOR	MANIFEST	PROFILE NO.
T.P.T	2345647	EC2231

TRACTOR LICENSE NO.	TRAILOR LICENSE NO.	Bin#	RECEIPT #
1W81679			87411

SAMPLE # 010425

NO SAMPLE PER WAP # (circle one) 1 2 3 4 5 6 7 8 9 10

SITE DRIVER	SAMPLE TIME:
DATE	LABORATORY IN:
START	RECEIVING OUT:
FINISH	DRIVER: Rick
WASHOUT METER	TRANSPORTER
FINISH	Disposal
START	RELEASED BY
GALLONS USED	

MANDATORY ANALYSIS

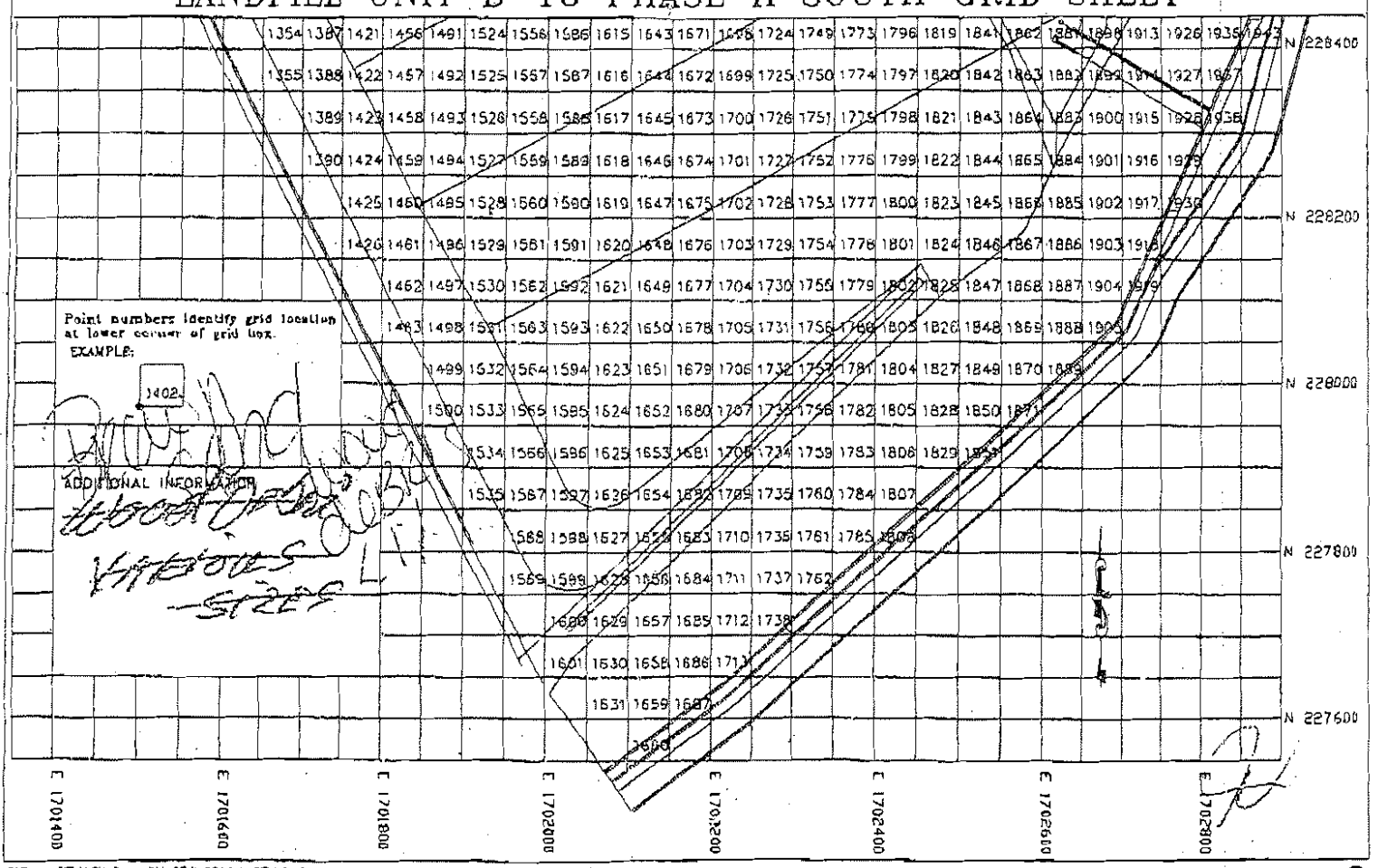
PHYSICAL STATE	SOLID	LIQUID	Brown sand
APPEARANCE			
pH			10
WATER MIX			SOL
FLAM POTENTIAL	NEG	POS	
CN-SCREEN	NEG	POS ____	PPM
S= SCREEN	NEG	POS ____	PPM
OXIDIZER	NEG	POS	
RADIO SCREEN	BKGD	POS	
ANALYST			

SUPPLEMENTAL ANALYSIS

PAINT FILTER TEST	NA	PASS	FAIL
VISIBLE OIL	NEG	POS ____	%
PCB SCREEN	NA	ND POS ____	PPM
PERCENT SOLID			
DENSITY		____ LBS/GAL	
CALCULATED QTY			
LWCT	ΔT = ____	°F	
SET	ΔT = ____	°F	
> 50% DEBRIS	YES	NO	
> 60 MM	YES	NO	
< 6.75 FT.	YES	NO	
CAN MAJORITY OF WASTE BE COATED ON ALL SIDES	YES	NO	INIT.

MULTIPLE LOAD #	DATE
SEE MANIFEST	GRID POINT
PROFILE EXPIRATION	ELEVATION
TREATMENT CODE ____ UNIT	TIME
TIME OUT	AM/PM
REC. TECH.	

LANDFILL UNIT B-18 PHASE II SOUTH GRID SHEET



Printed on Recycled Paper

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. Form designed for use on elite (12-pitch) typewriter.

See Instructions on back of page 6.

WIC # 46092 710899 X

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
CAL000285956	86615		

3. Generator's Name and Mailing Address
THE PRESIDIO TRUST
34 GRAHM ST
4. Generator's Phone (415)341-5155
SAN FRANCISCO CA 94129

A. State Manifest Document Number: 25134476
B. State Generator's ID:

5. Transporter 1 Company Name: 21st CENTURY EMI
6. US EPA ID Number: CAR000164012
C. State Transporter's ID (Reserved.):
D. Transporter's Phone: (877)748-3040

7. Transporter 2 Company Name: SLT Express
8. US EPA ID Number: UTR000007108
E. State Transporter's ID (Reserved.):
F. Transporter's Phone: (800)627-7047

9. Designated Facility Name and Site Address
21st Century EMI
2095 Newlands Dr. East
Fernley, NV 89408
10. US EPA ID Number: NVD980895338
G. State Facility's ID: NVD980895338
H. Facility's Phone: (775) 575-2760

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. RQ HAZARDOUS WASTE, LIQUID, N.O.S. (LEAD) 9 NA3082 PGIII RQ(D008) ERG(171)	004	T P	00900	G	State: 132 EPA/Other: D008
b.					State: EPA/Other:
c.					State: EPA/Other:
d.					State: EPA/Other:

J. Additional Descriptions for Materials Listed Above
a) 125134-01 - FIREWALL GROUND WATER - WATER (1)
ERRS # 96-012

K. Handling Codes for Wastes Listed Above
a. 15/03 b. c. d.

15. Special Handling Instructions and Additional Information
WEAR PROPER PROTECTIVE CLOTHING. EMERGENCY RESPONSE PHONE (800) 567-7455.
Site Address: 644 Mason, SF CA 94129

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
George Ford for the Presidio Trust	George Ford	02	14	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Joseph C. Dawson	Joseph C. Dawson	02	14	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
ANDRE HINOJOSA	Andre Hinojosa	02	20	06

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Month	Day	Year
INEZ LAMBERT	Inez Lambert	02	21	06

DO NOT WRITE BELOW THIS LINE.

GENERATOR
TRANSPORTER
FACILITY

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

DTSC 8022A (1/99)
EPA 8700-22

White TSDF SENDS THIS COPY TO DTSC WITHIN 30 DAYS.
To: P.O. Box 3000, Sacramento, CA 95812

DISTRIBUTION

APPENDIX A
Draft
Environmental Field Report
Subsurface Geoarchaeological Survey of the Building 207/231 Area
Presidio of San Francisco, California

September 29, 2006

Copies 1-9:	Presidio of San Francisco
Copies 10-11:	MACTEC Engineering and Consulting, Inc.

P:\Secretarial\MBarker\POSF\MB61707_Appen A_Env Rpt 9-29-06 final DRAFT.doc

APPENDIX B

Trench Soil Descriptions and Dimensions

TRENCH SOIL DESCRIPTIONS AND DIMENSIONS

Subsurface Geoarchaeological Survey – San Francisco Presidio

The following trench descriptions are from field notes with few additions modifications. Where data are absent (i.e., Munsell color designations), such data were not collected in that trench or for that soil horizon. Due to the difficulty in correlating strata across landforms, stratum numbers presented here are valid for the one trench that they describe and are not necessarily meant to apply to other trenches in the area. For the meanings of different alphanumeric combinations, see the Stratigraphic Identification and Description section in the report text.

Trench 38TP100: 12.1 meters long, 1.0 meter wide

Depth (mbs)	Stratum	Horizon	Description
0–0.6	II	Ap1	Fill. Dark brown loamy sand; massive structure.
0.6–1.5	II	Ap2	Fill. Unit present only in eastern half of trench; filled into Stratum III. Gray sandy clay; massive structure; distinct band of gray clay present at upper and lower boundary.
0.6–1.5	II	Ap3	Fill. Unit present only in western half of trench (cut/removed in eastern half of trench). Medium to large, subangular, clast-supported, red chert gravels.
1.5–1.7	II	Ap4	Fill. Dark brown silty clay loam; weak granular structure; common fine roots and root holes; abrupt and smooth lower boundary; appears compacted (mechanically?).
1.7–2.7	I	2C?	Fine to medium, dark gray sand; single-grain structure; loose; boundary unexcavated.

Trench 38TP101: 19.5 meters long, 1.0 meter wide

Depth (mbs)	Stratum	Horizon	Description
0–0.3	IV	Ap1	Fill. Asphalt and road base comprised of medium to large gravel-sized red chert.
0.3–0.7	IV	Ap2	Fill. Sand and subangular to rounded, large gravel.
0.7–2.4	IV	Ap3	Fill. Alternating bluish gray to brown sandy clay. Historic-period cultural materials, including fragments of white improved earthenware, a tube insulator, milk bottle finish, fragments of hexagonal tile, and sewer tile terra cotta.
2.4–2.5	III	2Aib	Peat.
2.5–2.9	III	2C?	Light gray silty clay, massive structure (?); few to common root holes.
2.9–3.5	II	3C	Light gray sandy clay with common (south half of trench) to few (north half of trench) shell fragments.
3.5–4.6	I	4C	Dark gray sand; single-grain structure; few to common whole shells and shell fragments; boundary unexcavated.

Trench 207TP100: 13.9 meters long, 1.0 meter wide

Depth (mbs)	Stratum	Horizon	Description
0–0.5 (varies laterally)	II	Ap1	Fill. Dark brown loamy sand; massive structure. This fill package was cut into other noted horizons and dips steeply at about 3.7 m (12 ft.) from east end of trench, extending beyond the maximum depth of the excavation. Various historic-period cultural materials, including brickbats, glass, and porcelain.
0.5–0.8 (east)	II	Ap2	Various layers of fill. Road base comprised of angular, large gravel-sized, red chert overlying brown sandy clay loam. Macadam at lower boundary.
0.8–1.1 (east)	II	Ap3	Fill. Bluish gray sandy clay loam.
1.1–2.4 (east)	II	Ap4	Fill. Dark gray sand with discreet clay pockets; saturated angular gravel layer at 1.8 mbs; few milled lumber fragments.
2.4–3.2	I	2C	Gray sand; single grain structure; boundary unexcavated

Trench 207TP101: 10.0 meters long, 1.0 meter wide

Depth (mbs)	Stratum	Horizon	Description
0–0.6	II	Ap1	Various layers of fill. Asphalt and road base comprised of crushed, gravel-sized red chert and other materials.
0.6–1.8	II	Ap2	Fill. Dark grayish brown sand with gravel; cultural materials, including a porcelain knob insulator, bricks, and white improved earthenware fragments; increase in rock/rubble at base of horizon.
1.8–2.9	II	Ap3	Fill. Bluish gray sand.
2.9–3.0	I	2Aib	Peat.
3.0–4.0	I	2C	Clay with sand stringers; increased sand content at base of unit; common whole clam and mussel shells; no cultural materials; boundary unexcavated.

Trench 230TP100: 15.6 meters long, 1.0 meter wide

Depth (mbs)	Stratum	Horizon	Description
0–0.6	IV	Ap1	Various layers of fill. Asphalt and road base comprised of red chert gravel and other crushed rock.
0.6–1.1	IV	Ap2	Fill. Dark gray silt loam with historic-era cultural debris.
1.1–2.0	IV	Ap3	Fill. Olive-gray clay loam.
2.0–2.2	III	2C	Fine to medium-gray sand (saturated); single-grain structure.
2.2–3.1	II	3C	Interfingered, dark gray, fine to medium sand and clay; massive structure.
3.1–3.9	I	4C	Olive sandy clay, massive structure; boundary unexcavated.

Trench 231TP100: 10.4 meters long, 1.0 meter wide

Depth (mbs)	Stratum	Horizon	Description
0–0.6	IV	Ap1	Various layers of fill. Asphalt and road base comprised of red chert, gravel, and other crushed rock.
0.6–0.9	IV	Ap2	Fill. Bluish gray and brown silty clay; construction material.
0.9–1.1	IV	Ap3	Fill. Brown silty clay.
1.1–1.8	IV	Ap4	Fill. Bluish gray to olive-gray silty clay.
1.8–2.1	III	2C	Dark brown sand; single-grain structure.
2.1–3.4	II	3C	Olive–gray, thin sand lenses interfingered with very thick clay bands.
3.4–4.4	I	4C	Bluish gray sandy clay; sandier at base of unit; very common whole clam shells (decreasing with depth); boundary unexcavated.

Trench 231TP101: 13.4 meters long, 1.0 meter wide

Depth (mbs)	Stratum	Horizon	Description
0–0.5	IV	Ap1	Various layers of fill. Asphalt and road base comprised of red chert, gravel and other crushed rock.
0.5–0.9	IV	Ap2	Fill. Dark brown silty clay; cultural materials include various ferrous metal fragments.
0.9–2.1	IV	Ap3	Fill. Olive-gray silty clay with black mottles.
2.1–2.3	IV	Ap4	Fill. Gray sandy clay; milled wood fragments in northwestern portion of trench.
2.3–2.4	III	2Ab	Brown peaty clay; abundant, dense, fine roots forming a “root mat.”
2.4–2.9	III	2C	Dark olive-brown silty clay; massive structure.
2.9–3.2	II	3C1	Gray sand; single-grain structure.
3.2–3.8	II	3C2	Bluish to olive-gray clay; massive structure.
3.8–4.0	I	4C1	Gray sand; single-grain structure.
4.0–4.5	I	4C2	Bluish to olive-gray clay; massive structure; boundary unexcavated.

Trench 231TP102: 18.5 meters long, 1.0 meter wide

Depth (mbs)	Stratum	Horizon	Description
0–0.3	IV	Ap1	Various layers of fill. Asphalt and road base comprised of gravel and other crushed rock.
0.3–0.8	IV	Ap2	Fill. Brown sand; massive structure; band of angular, gravel-sized red chert in middle of horizon; cultural materials, including fragments of bottle glass, ceramics, and faunal bone.
0.8–1.1	IV	Ap3	Fill. Dark brown sandy clay; massive structure.
1.1–2.3	IV	Ap4	Fill. Bluish to olive-gray clay with sand pockets; massive structure.
2.3–2.4	III	2Aib	Black sandy clay; abundant fine roots forming a "root mat"; organic rich.
2.4–2.9	III	2C	Bluish gray to brown sand; single-grain structure.
2.9–3.2	II	3Ab	Brown sand; abundant fine roots forming a "root mat."
3.2–3.7	II	3C	Bluish gray sand; single-grain structure.
3.7–4.4	I	4Co	Light brown to reddish brown sand; single grain structure; few to common, soft ox nodules; boundary unexcavated.

Trench 231TP103: 10.5 meters long, 1.0 meter wide

Depth (mbs)	Stratum	Horizon	Description
0–0.3	III	Ap1	Various layers of fill. Asphalt and road base comprised of red chert, macadam, gravel and other crushed rock.
0.3–0.6	III	Ap2	Fill. Bluish gray color.
0.6–0.8	III	Ap3	Fill. Angular, gravel-sized, red chert fill.
0.8–2.1	III	Ap4	Fill. Dark brown silty clay with pockets of gleyed silty sand. Cultural materials, including ceramics and glass.
2.1–2.3	II	2Ab	Bluish to olive-gray sandy clay; common fine to medium, dark roots; appears slightly truncated.
2.3–3.0	II	2C	Bluish to olive-gray sandy clay; massive structure.
3.0–3.4	I	3Ab	Grayish brown silty clay; abundant fine roots forming a "root mat."
3.4–4.3	I	3C	Grayish brown sand; single-grain structure; boundary unexcavated.

APPENDIX C

Artifact Catalog

ARTIFACT CATALOG

Subsurface Geoarchaeological Survey – San Francisco Presidio

Artifacts identified in the trenches are included in the catalog below. Most of the artifacts were returned to trenches before they were backfilled. A diagnostic bottle base and a bone item were retained and were turned over to the Presidio Archaeology Laboratory (noted as * *Retained* below).

Trench 38TP101 Artifact Description by Group and Category

Group and Category	Description	Count	MNI
DOMESTIC			
Food Prep/Consumption			
	Colorless Glass Milk Bottle Finish Fragment	1	1
INDEFINITE			
Indefinite			
	White Improved Earthenware Fragments	3	1
STRUCTURAL			
Materials			
	Porcelain Hexagonal Tile	2	1
Electrical	Porcelain Tube Insulator	1	1
Plumbing	Sewer Tile Fragments	2	1
TOTAL		9	5

Note: MNI = minimum number of items.

Trench 207TP100 Artifact Description by Group and Category

Group and Category	Description	Count	MNI
DOMESTIC			
Food Prep/Consumption			
Drinking Vessel	Porcelain Teacup Fragment, Transferprinted Phoenix Pattern	1	1
Serving	Chinese Handpainted Porcelain, Lobed Footed Dish Fragment	1	1
INDEFINITE			
Indefinite			
	White Improved Earthenware Large Pitcher/Ewer Body Fragment	1	1
	Porcelain Hollow Form Fragment, Molded Swirl Ribs	1	1
Misc. Containers			
	Green Glass Bottle Body Fragment	1	1
TOTAL		5	5

Note: MNI = minimum number of items.

207TP101 Artifact Description by Group and Category

Group and Category	Description	Count	MNI
DOMESTIC			
Food Prep/Consumption			
Tableware	White Improved Earthenware Hollow Rim Fragment, Two Green Transferprint Bands	1	1
INDEFINITE			
Indefinite			
Indefinite	White Improved Earthenware Hollow Form	1	1
STRUCTURAL			
Hardware			
Fasteners	Nails	5	5
Materials			
	Brick Bats	2	1
Electrical	Porcelain Knob Insulator	1	1
Plumbing	Porcelain Fixture	2	1
TOTAL		13	11

Note: MNI = minimum number of items.

Trench 230TP100 Artifact Description by Group and Category

Group and Category	Description	Count	MNI
ACTIVITIES			
Transportation			
Fastener	Ferrous Rail Spike	2	2
DOMESTIC			
Food Prep/Consumption			
Food/Food Storage	White Glass Canning Jar Lid Liner	1	1
INDEFINITE			
Indefinite			
	White Improved Earthenware Body Fragment	7	7
	White Improved Earthenware Blue Handpainted Body Fragment	1	1
	White Improved Earthenware Black Transferprinted Body Fragment	1	1
STRUCTURAL			
Electrical			
	Porcelain Knob Insulator	1	1
	Porcelain Tube Insulator	1	1
Hardware			
Fastener	Ferrous Bolt	1	1
Materials			
	Brick Bats	2	1
TOTAL		19	18

Note: MNI = minimum number of items.

Trench 231TP100 Artifact Description by Group and Category

Group and Category	Description	Count	MNI
DOMESTIC			
Heating/Lighting			
	Colorless Glass Lamp Shade	1	1
INDEFINITE			
Indefinite			
	White Improved Earthenware Fragments	2	1
Misc. Containers			
	AQUA GLASS BOTTLE FRAGMENTS	2	1
PERSONAL			
Social Drugs–Alcohol			
Container	Olive Glass Champagne Bottle, Pushup Fragment	1	1
STRUCTURAL			
Hardware			
Fastener	Ferrous Wire Nails	2	2
Material	Glass Window	2	
TOTAL		9	6

Note: MNI = minimum number of items.

Trench 231TP102 Artifact Description by Group and Category

Group and Category	Description	Count	MNI
DOMESTIC			
Food/Food Storage			
Container	Canning Jar, Aqua Glass Base Fragment, Embossed "PA(TENT)/(NOV 2)6 67/ 48 [in center]"	1	1
Container	Club Sauce Bottle, Aqua Glass Finish Fragment	1	1
Container	Soda Bottle, Aqua Glass Hobble Skirt Base Fragment, Embossed "SAN FRANCISCO/CALIF/S"	1	1*
INDEFINITE USE			
Indefinite			
	White Improved Earthenware, Hollow Fragment	1	1
	Flat Bone Tool or Stay	1	1*
Misc. Containers			
	Jug, Green Glass Finish Fragment, ~5 gal.	1	1
	Bottle, Aqua Glass Body Fragments	6	2
Misc. Metal Items			
	Ferrous Bars	2	
TOTAL		14	8

Note: MNI = minimum number of items. * Retained.

Trench 231TP103 Artifact Description by Group and Category

Group and Category	Description	Count	MNI
DOMESTIC			
Food/Food Storage			
Container	Soda Bottle, Base Fragment, Embossed "S.F."	1	1*
INDEFINITE USE			
Indefinite			
	White Improved Earthenware, Body Fragments	2	1
STRUCTURAL			
Materials			
	Glass Window, Fragments	14	
TOTAL		17	2

Note: MNI = minimum number of items. * Retained.

APPENDIX D

DRAFT WORK PLAN FOR SUBSURFACE GEOARCHAEOLOGICAL SURVEY

Dalldorf and Meyer 2005

DRAFT

WORK PLAN FOR SUBSURFACE GEOARCHAEOLOGICAL SURVEY OF THE BUILDING 207/231 AREA, PRESIDIO OF SAN FRANCISCO, CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA

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14 November 2005

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WORK PLAN FOR SUBSURFACE GEOARCHAEOLOGICAL SURVEY OF THE BUILDING 207/231 AREA, PRESIDIO OF SAN FRANCISCO, CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA

1.0 INTRODUCTION

This work plan for a subsurface geoarchaeological survey was developed in response to a Corrective Action Plan (CAP) (MACTEC 2005) that proposes to remove contaminated materials from the Building 207/231 Area, located in the Presidio of San Francisco (hereafter referred to as project area). A subsurface geoarchaeological survey will be conducted in order to comply with Section 106 of the National Historic Preservation Act (NHPA), as amended, which requires consideration of the effects of an undertaking on properties eligible for inclusion in the National Register of Historic Places. This document (1) briefly describes the nature and scope of the project; (2) provides background information about the surface and subsurface deposits in the project area; (3) reviews the pre-field logistical issues; (4) discusses the general field approach; and (5) describes the specific field survey methods and sampling techniques.

2.0 REMEDIATION PROJECT DESCRIPTION

Situated at the north end of the San Francisco peninsula, the project area lies within a portion of the Presidio of San Francisco, just south of a recently restored segment of Crissy Field Marsh. The CAP proposes to remediate the project area by excavating and removing contaminated soils, sediments, and other materials from specific locations (Figure 1).

3.0 GOALS OF THE SUBSURFACE GEOARCHAEOLOGICAL SURVEY

The CAP proposed that a pre-remediation archaeological investigation be conducted to avoid or minimize potential adverse impacts to unidentified, NPHP-eligible archaeological resources that might result from the remediation excavations. To accomplish the investigation, MACTEC requested the Anthropological Studies Center (ASC) at Sonoma State University develop this geoarchaeological survey work plan.

The need for a subsurface survey was prompted in part by the fact that the present ground surface in the project area consists of artificial fill and man-made structures, which have effectively buried the former "natural" ground surface. Thus, any intact archaeological deposits in the project area are buried. Given these substantial landscape changes, a subsurface geoarchaeological survey is the most efficient and effective way to identify buried archaeological deposits. At the same time, the survey can assess the general structure, composition, integrity, and stratigraphic sequence of the natural and/or cultural subsurface deposits. The general goal of the subsurface survey is to characterize past human use of the project area in relation to the events and/or



Figure 1. Proposed geoarchaeological trenches for the Building 207/231 Area

conditions that lead to the formation of the present landscape. The survey will achieve this by revealing former landscapes and identifying prehistoric or historic-era archaeological remains that may be present. Because human occupation in the region is generally accepted to span the last 13,000 years, this geoarchaeological survey will focus on Holocene and late Pleistocene deposits.

4.0 SURFACE AND SUBSURFACE DEPOSITS

This section summarizes the existing information about landscape history, soils, and geology, as well as previous studies that are relevant for understanding the surface and subsurface deposits in the project area.

4.1 Historic Landscape

Historic maps from the mid-1800s to the early 1900s show that sand dunes, a tidal marsh and slough, and the channel of unnamed creek that drained Tennessee Hollow were located in portions of the project area before it was artificially filled. These natural geomorphic features are important because prehistoric human settlements in the region are frequently located along stream banks or near the margins of San Francisco Bay. The presence of nearby prehistoric sites CA-SFR-6 and CA-SFR-129 provides direct evidence that this settlement pattern was practiced in the area that is now the Crissy Field portion of the Presidio (Clark 2001; Jones and Stokes 2002).

Although small portions of areas classed as sensitive for historic-era remains (i.e., the quartermaster complex and the 19th century quartermaster depot and landfill) may be contained within the project area (Basin Research Associates 2001), Jones and Stokes (2002) estimated its historical sensitivity to be relatively low.

4.2 Surface Deposits

Existing soil and geologic maps provide general information about the nature and extent of project area surface deposits. Surface soils are classified as urban land in the northern two-thirds of the project area and as orthents of the cut and fill urban land complex in the southern one-third (USDA 2004). Knudsen et al. (2000) have mapped the quaternary geologic units at the surface of the project area, which mainly consist of artificial fill over bay mud, with a very small area of Quaternary alluvium in the extreme southwest corner. Together, these studies indicate a substantial amount of artificial fill has been deposited in the project area. This fill may cover prehistoric remains and may contain redeposited archaeological materials.

4.3 Subsurface Deposits

At least two studies have examined the subsurface stratigraphy of the project area. Basin Research Associates, Inc. (2001) produced a coring program report based on the results of 88 cores in and around the Building 207/231 Area. The report found no evidence of prehistoric sites or cultural materials. Four of the nine cores in the project area were concentrated around Building 230 and returned positive results for historic-

era cultural material. However, there are significant limitations to the site identification potential (especially prehistoric) possessed by this "soda-straw" method of subsurface investigation. Jones and Stokes (2002) mechanically excavated five trenches in the project area, four located north of Gorgas Avenue. None revealed any prehistoric archaeological material; one contained historic-era artifacts.

The subsurface stratigraphy documented in these reports was used to inform the present field investigations. Unfortunately, the reports contain very little pedogenic analysis of subsurface sediments, critical for a geoarchaeological understanding of the project area. Moreover, the Jones and Stokes report found that "a more extensive trenching program would be needed to document the many land-filling events on the lower post" (2002:95).

ASC staff geoarchaeologist, Graham Dalldorf, preliminarily examined selected cores generated by the coring program report of 2001. The assessment confirmed the presence of artificial fill and weakly-developed buried soils. The artificial fill is widespread, but highly variable in thickness—likely a reflection of the varied topography of the prehistoric dune and marsh landscape. The weakly-developed soils appear to be located on former dune surfaces that are cited by Meyer (2002) as archaeologically sensitive.

Based on this review of existing data, the project area is sensitive for both prehistoric and historic-era archaeological deposits and materials.

5.0 PRE-FIELD LOGISTICAL CONSIDERATIONS

This section provides information about logistical issues that must be addressed prior to fieldwork, including health and safety, underground utilities coordination, hazardous materials coordination, and trench safety.

5.1 Health and Safety

An approved health and safety plan (HASP) will be prepared by MACTEC prior to the commencement of fieldwork and all project personnel will follow its requirements. Regular safety meetings will be held in the field to ensure that applicable health and safety precautions are followed.

5.2 Underground Utilities Coordination

The trench locations shown in Figure 1 were developed in coordination with Presidio Trust and MACTEC personnel with special attention to the location of underground utilities; Jim Henderson of MACTEC provided utilities drawings. Every effort has been made to place the proposed trench locations to avoid underground utilities. ASC personnel will mark the excavation areas indicated in the CAP for Underground Service Alert (USA) inspection, along with a 10-foot buffer zone around each area to increase the likelihood that all underground utilities are identified and to allow for some flexibility in the placement of the subsurface survey trenches. Presidio

Trust personnel will notify the appropriate in-house utilities location service and arrange for USA to examine the project area.

5.3 Hazardous Materials Coordination

Excavations and the inspection or collection of archaeological materials may lead to exposure to hazardous materials. Most trench locations are located within an identified contamination area, as those areas are to be excavated during implementation of the CAP, potentially adversely impacting subsurface archaeological deposits that may be present. It is, therefore, assumed that much of the excavated sediment will contain hazardous materials. All ASC personnel who must enter the field excavation exclusion zone will have received the required hazardous materials training specified by the HASP.

In accordance with the HASP, qualified specialists from MACTEC and/or the Presidio Trust will be available during the excavations to monitor the level of potential contaminants in the air of trench spaces as well as deposits removed from the trenches to insure that the work is performed in conditions that conform to appropriate health and safety standards.

5.4 Trench Safety

The relatively high water table and resulting instability of trench sidewalls will demand a high degree of caution on the part of project personnel. In accordance with Federal Occupational Safety and Health Administration (OSHA) guidelines, project personnel will not enter any portion of a trench where the depth of the trench below ground surface (bgs) exceeds 4 feet (1.2 m). Project personnel shall be allowed to enter portions of trenches that are less than 4 feet (1.2 m) bgs if it is safe to do so. Trenches may also be "stepped down" so that the surrounding ground surface is lowered. In this instance, project personnel will not to enter any portion of a trench where the depth of the trench below the recently excavated lower "ground" surface exceeds 4 feet.

Trenches will be dewatered only as needed for the purpose of backfilling or in the event that a potentially significant archaeological find is made. If standing groundwater fills the base of a trench, sediments may be removed by mechanical excavation, but no project personnel will be allowed to enter the trench.

6.0 SUBSURFACE SURVEY APPROACH AND METHODS

This section discusses the methodological approach as well as specific field techniques that will be used for the subsurface geoarchaeological survey.

6.1 Methodological Approach

Archaeologists generally utilize pedestrian survey as their primary method of searching for unknown archaeological sites (Dunnel and Dancey 1983). Various environmental conditions demand the application of appropriate survey techniques and

sampling strategies to maximize the probability that sites will be discovered (Schiffer, Sullivan, and Klinger 1978:8).

Buried sites generally lack visible and/or obtrusive features that indicate their presence to an observer in the field; consequently, pedestrian survey is usually ineffective for locating buried archaeological sites (Bettis 1992:120). If it is accepted that buried sites "are probably always underrepresented in survey samples" (Nance 1983:349), the difficulty of locating them can be confronted as a sampling problem in the survey or research design (McManamon 1984). Thus, archaeological studies should not only consider the possibility of buried sites, but also address the probability of discovering them in various portions of a study area. Given the depth of artificial fill noted above, mechanically excavated trenches will be the most efficient and effective means to identify subsurface archaeological deposits and to determine the stratigraphic sequence in the project area.

6.2 Exploration Trenches

The subsurface survey will be conducted by excavating a series of exploration trenches using a tractor-mounted backhoe with a standard 36-inch wide bucket. Trenches have been placed to maximize the artifact discovery potential while staying within the general bounds of the remedial units identified in the CAP (MACTEC 2005). The general location and overall size of the proposed trenches will be governed by the following principles:

1. Trenching is to be generally restricted to the locations where earth-disturbing activities are most likely to occur during implementation of the CAP.

2. Within the CAP excavation areas, trenches will be placed at locations considered to have the greatest potential to contain buried prehistoric archaeological deposits (i.e., stream banks, edges of marsh or slough), and/or at locations where the subsurface landform stratigraphy is expected to be most informative (i.e., contact between two or more deposits or landforms).

Given these considerations, trenching will be focused within the now buried, former floodplain of an unnamed creek that drains Tennessee Hollow and the sand dunes located along the north and south margins of the marsh/slough, as indicated by historic maps. The trenches will be oriented to avoid existing structures and underground utilities, while maximizing the opportunity for archaeological discovery; this will minimize the amount of material that may be generated from the excavations. The general locations of the proposed exploration trenches are shown in Figure 1. Table 1 summarizes the CAP remedial unit characteristics and the proposed trenches.

The precise location, size, and orientation of each trench will be determined in the field based on existing conditions and constraints, such as the most current information regarding the location of underground utilities, as well as the results of active or previous trenching. It is expected that most exploration trenches will be at least 1.0 m (3.3 ft.) wide, 1.4 m (4 ft.) deep, and 3.1 m (10 ft.) long.

Table 1. Remedial Unit Stratigraphic Characteristics

Remedial Unit Name	Surface Deposits	Subsurface Deposits*	Depth of Fill* bgs (ft/m)	Depth of Proposed Impact** bgs (ft/m)	Number of Proposed Trenches
Former Bldg. 207 Area	Artificial fill	Mixed alluvial and aeolian	5.0/1.5	7.5/2.3	2
Former Bldgs. 38, 38-A Area	Artificial fill	Alluvial?	14.0/4.3	10.0/3.0	2
Existing Bldg. 231 Area	Artificial fill and Quaternary Alluvium	Mixed alluvial and aeolian	2.5/0.8	10.0/3.0	4
Existing Bldg. 230 Area	Artificial fill	Mixed alluvial	3.0/0.9	5.5/1.7	1

All depth measurements are approximate. *Based on the nearest core or trench. **According to CAP.

Some trenches may extend to 9.1 m (30 ft.) in length, and short segments within a few trenches will extend to depth of about 4.6 m (15 ft.) or the maximum reach of the backhoe. It is anticipated that these trench segments will need to be excavated to this depth in order to reach late Pleistocene deposits. The longer and deeper trenches allow the explorations to respond to differences in the contours of the subsurface deposits and facilitate safe access and egress from the trenches (see Trench Safety and shoring issues above). ASC personnel will be responsible for directing the movement of the backhoe.

The excavation of a trench will be halted under any of the following conditions:

1. Bedrock or Late Pleistocene deposits are identified. Caution will be exercised to ensure that excavations do not fully penetrate the bay mud to eliminate the possibility of cross contamination of lower soil units.
2. Sidewall liquefaction begins to undermine adjacent areas.
3. Hazardous contaminant levels are detected in the excavated materials or air in the trench space by MACTEC or Presidio Trust personnel that exceed the requirement of Level D personal protection.
4. Archaeological materials or deposits are identified and sufficiently documented.

Each trench will be numbered according to a system provided by Presidio Trust personnel. The depth and general nature of deposits exposed in the trenches will be recorded in the field, with additional attention given to those trenches that contained buried soil horizons and/or archaeological remains. Selected trenches may be drawn and described in greater detail if conditions allow. The trench locations will be plotted onto digital orthographic aerial photographs and recorded using a global positioning system (GPS). Presidio Trust personnel may collect samples from excavated trenches for environmental testing. Such samples, including quality assurance/quality control

samples, will be collected and analyzed in accordance with the Presidio-wide Quality Assurance Project Plan (Tetra Tech 2001.)

Trenches will be backfilled as soon as they are recorded. The backhoe bucket will be used to tamp down the trench fill. A trench that must be left open overnight will be secured as required in the HASP. Excess soil and water will be containerized and profiled for disposal. Excess water that is determined to be uncontaminated will be disposed of in the sanitary sewer. The trench site will be restored as closely as possible to its original surface contour.

6.3 Stratigraphic Identification and Description

The natural and cultural stratigraphy will be identified by carefully examining the deposits exposed in the sidewalls of the subsurface survey trenches. Stratigraphic units (strata) will be identified on the basis of physical composition, superposition, relative soil development, and/or textural transitions. In the field, each stratum will be assigned a Roman numeral (I, II, III, etc.) beginning with the oldest or lowermost stratum identified in each trench. Buried soils (i.e., paleosols), representing formerly stable ground surfaces, will be identified in the field on the basis of color, structure, horizon development, bioturbation, lateral continuity, and the nature of the upper boundary (contact) with the overlying deposit (Birkeland et al. 1991; Retallack 1988).

The master soil horizons will be designated by upper-case letters (O, A, B, C, or R) preceded by Arabic numerals (2, 3, etc.) when the horizon is associated with a different stratum (i.e., 2Cu); number 1 is understood but not shown. Deposit(s) of artificial fill (Ap horizon(s)) will likely characterize the upper portion of trench sidewalls.

Combinations of these numbers and letters indicate the important characteristics of each major stratum and soil horizon; they are consistent with those outlined by Birkeland et al. (1991), Schoeneberger et al. (1998), and the Soil Survey Staff (1998). Trenches excavated into different landforms usually exhibit dissimilar stratigraphy, due to the diverse processes involved in each landform's formation. As a single trench may contain only a portion of the stratigraphy for the area, it will be important to compare and correlate the results from the excavations to construct the project area's stratigraphic sequence.

6.4 Identification and Collection of Natural and Cultural Materials

Archaeological artifacts will be identified by examining the deposits removed from the trenches using hand tools—such as hoes, rakes, picks, and shovels—and by inspecting the trench walls whenever it is necessary and safe to do so. These activities will be performed while each trench is being excavated and/or immediately thereafter. A wet screening station will be established within the project area, at a safe distance from the trenching. Where archaeological materials are suspected or observed in the sediment, a sample will be placed in a plastic bucket and taken to the station where it will be wet screened through 3-mm (1/8 inch) mesh screen in order to recover the remains. The station will be fenced to exclude non-authorized personnel.

While the wet screening process will assist in decontaminating artifacts, it will also result in contaminated byproducts, such as water and loose sediment (see Appendix A). The wet screening area will contain a settling basin to capture potentially contaminated byproducts, which will be handled, stored, and disposed of according to the HASP and Presidio waste storage policies. A suitably qualified individual will be present to ensure compliance with the HASP. To minimize the quantity of potentially contaminated water that must be disposed of in this way, the process will—to the degree feasible—recycle screening water through the settling basin.

Samples of soil, sediment, and/or charcoal may be collected from appropriate contexts (i.e., preferably non-contaminated) for radiocarbon dating or other analysis. The samples and archaeological materials will be collected, handled, and curated in accordance with *Protocols for Contaminated Archaeological Artifacts on Presidio Park Lands* (Praetzellis 2005); see Appendix A. In the unlikely event that human remains are discovered, work will halt in the area of the discovery. Project personnel will treat any human remains and any potentially associated artifacts at the site with appropriate care and respect. As required by provisions of the California Public Resources Code (PRC) Sections 5097.98 and 5097.99, the archaeologist will contact the San Francisco County Coroner. The archaeologist will also notify Leo Barker, the responsible NPS official. If the remains are of Native American origin, the remains themselves as well as any funerary objects, sacred objects, or items of cultural patrimony encountered will be treated under the Native American Graves Protection and Repatriation Act of 1990.

7.0 TECHNICAL REPORT

A technical report describing these investigations will be prepared. The report will contain the following sections: executive summary, introduction, project goals, remediation project description, a review of previous studies, description of fieldwork, fieldwork results, conclusions, recommendations, and references cited. The report will also contain maps and profile drawings at appropriate scales, as well as a catalog of artifacts uncovered and discarded or retained.

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APPENDIX

Protocols for Contaminated Archaeological Artifacts

PROTOCOLS FOR CONTAMINATED ARCHAEOLOGICAL ARTIFACTS ON PRESIDIO PARK LANDS

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PROTOCOLS FOR CONTAMINATED ARCHAEOLOGICAL ARTIFACTS ON PRESIDIO PARK LANDS

1.0 PURPOSE

This document provides guidance to archaeologists on Presidio park lands who may encounter artifacts contaminated with metals (e.g., lead) and organic contaminants (e.g., TPH, PCBs, and PAHs). Its purpose is to assist archaeologists in the safe handling, processing, and curation of these remains.

These protocols must be used in concert with professionally prepared health and safety plans (HASPs) for both field and lab work. It is essential that field archaeologists read and comply with the HASP for their work site.

These protocols, together with the HASP, will help the archaeologist:

- assess which artifacts should be collected and which recorded then discarded in the field
- safely handle and package artifacts to be returned to the lab
- safely process and store artifacts.

2.0 ARTIFACT COLLECTION AND RETENTION POLICIES

The protocols for ITC's archaeological program (ITC 1996**)** contain guidance for archaeologists monitoring earth-moving in the Presidio and the treatment of artifacts that result from these activities. This document requires collecting a representative "sample" of monitoring finds and retaining all materials from archaeological contexts that are deemed eligible to the National Register of Historic Places. The procedures include the following statements:

- When a discovery is made in the course of monitoring an excavation and the discovery consists of individual artifacts or artifact scatters that lack a meaningful context… the cultural materials collected in such a situation will be packaged together in an archival-quality reclosable plastic bag and labeled under this general provenience.
- Materials not intended for permanent curation… (i.e., pieces of modern trash) will be quantified, briefly described, then discarded.
- Cultural materials that are found to be contaminated that are non-porous will be decontaminated to the levels considered safe [for handling and storage].
- Cultural materials found to be contaminated but which cannot be decontaminated to levels considered safe due to their porosity, will be packaged and labeled with appropriate warnings. (ITC 1996:9.3)

2.1 Deciding to Retain or Discard Artifacts

ITC's protocols assume that all potentially important materials can and should be retained. As a practical matter, the expense and hazards associated with curating a large number of contaminated artifacts or a single highly contaminated object may be disproportional to the items' long research or interpretive value as defined in the project research design. While some items may retain a level of residual contamination that would justify their discard once adequately documented in the lab, others can be simply recorded in the field. This decision is at the discretion of the appropriate Presidio park archaeologist.

When artifacts are discovered, the archaeologist (and, where appropriate, the archaeological collections specialist) shall

- apply the decision tree (Figure 1), which specifies the conditions under which archaeological artifacts will be retained by field personnel and passed on to the archaeological laboratory for treatment;
- handle, package, and store artifacts according to the procedures outlined in this document.

3.0 ARTIFACT HANDLING, PROCESSING, AND CURATION PROCEDURES

This section guides archaeological personnel in their handling of artifacts at each phase of work: discovery, processing, and storage/curation.

3.1 Artifact Material Types

Figure 2 lists the types of materials that can be anticipated on Presidio archaeological sites. Artifacts made of these substances may have come into contact with hazardous materials and become contaminated. The extent of this contamination depends, among other factors, on the porosity of the material of which the artifacts are made. These material types vary greatly in their relative porosity. While the contamination of a non-porous artifact may be limited to the object's surface and removed with relative ease, a porous artifact may retain residual contamination within its interstices. Consequently, the safe handling and treatment of contaminated objects is, in many cases, contingent on their porosity as well as on the contaminant type (i.e., metals contamination is less likely to result in residual contamination post-cleaning as compared to organic contamination).

3.2 Handling Artifacts during Fieldwork, Processing, and Curation

Figure 3 describes the manner in which materials of various porosities are to be handled in the field and lab during processing and curation. While these procedures are intended to minimize harm to workers, the artifacts themselves may suffer if the procedures are not thoughtfully applied. In most cases, standard professional archaeological and conservation practices can be applied. The following guidance addresses special problems that may arise from the particular requirements of the HASP or the handling procedures presented in this document.

3.2.1 Decontamination in the field

Contaminated artifacts must be decontaminated before they are forwarded to the lab. An exception may be made for material of intrinsic value whose treatment requires procedures that can only be carried out in the lab. In this case, the materials must be packaged appropriately and clearly labeled with the type of suspected contaminant. All artifacts suspected of being contaminated must be packaged to confine the contaminant before they enter the lab.

3.2.2 Removing surface dirt

As sediments may contain contaminants, it is important to remove excess surface dirt from artifacts in the field by

- brushing or scraping, as appropriate
- washing with plain water
- cleaning with a solution of Alconox or similar mild detergent, as appropriate

Cleaning with a detergent will, in many cases, decontaminate non-porous and some semi-porous artifacts and allow them to be handled using standard archaeological methods. It is important not to soak porous or semi-porous material or to remove surface treatments (such as decals) during washing or cleaning.

Plain water used to free artifacts of surface dirt may be reused by allowing sediments to accumulate in a series of settling tanks and recirculating the water by a pump. This process of extracting artifacts from their encasing matrix may create or release byproducts that may themselves contain contaminants. These byproducts include

- contaminated water used to clean artifacts
- sediments that accumulate in the settling tanks
- ferrous metal encrustations

These byproducts must be handled, stored, and disposed of according to the HASP and Presidio waste storage policies.

3.2.3 Devitrification

Glass hydrates as it is exposed to the air and eventually may devitrify, becoming crazed and flaky. The scale that is created in this process may be harmful and can enter the skin through contact. Glass that shows signs of devitrification—such as iridescence—should be handled with disposable gloves.

3.2.4 Water-saturated materials

Porous and semi-porous materials from waterlogged environments should not be dried in the field. Excess liquids that may contain contaminants should not be collected and must be handled in accordance with HASP procedures. However, the artifact's current humidity level should be maintained while it is transported to the lab. In the case of fresh water saturation, this may be achieved by adding de-ionized water.

3.2.5 Discarding artifacts in the field

In some cases, a field decision may be made to discard certain artifacts rather than decontaminating and returning them to the lab. In this case, the materials may be simply recorded appropriately and placed back into the excavation.

3.2.6 Lab processing

In most cases, artifacts will have been decontaminated in the field before entering the lab. If contaminated materials must be brought into the lab they must be separated from the remainder of the collection. The type of suspected contaminant must be clearly marked on the outside of the box or other container. These artifacts must be handled in accord with the HASP.

When it is necessary to clean and decontaminate artifacts in the lab, arrangements must be made to dispose of any contaminated byproducts before they are created. These byproducts must be handled, stored, and disposed of according to the HASP and Presidio waste storage and disposal policies. When the decision is made in the lab to discard contaminated artifacts, these items must also be disposed of according to Presidio waste storage and disposal policies.

Contaminated artifacts may only be submitted for curation in exceptional circumstances and with the permission of the Presidio archaeologist. In this case, the artifacts must be packaged to confine the contaminant and the type of contamination must be clearly marked on the outside of the box or container.

3.2.7 Curation

Federal curation standards at 36CFR79 require that archaeological remains be handled, stored, cleaned, and conserved in a manner that protects them from breakage and possible deterioration from adverse temperature and relative humidity, visible light, ultraviolet radiation, dust, soot, gases, mold, fungus, insects, rodents and general neglect, as well as preserving data that may be studied in future laboratory analyses.

In most cases, contaminated artifacts will have been treated in the field or lab. Thus, handling these materials after curation should not require special measures in addition to standard archaeological curation practices. Any contaminated artifacts must be handled in accord with the HASP.

REFERENCES

36 Code of Federal Regulations Part 79

Curation of Federally Owned and Administered Archaeological Collections (Authority: 16 US Code 470 et seq.)

International Technology Corporation (ITC)

1996 Archaeological Protocols, IT Archaeological Program, Presidio of San Francisco, San Francisco, California. IT Corporation, Martinez, CA, prepared for USA Corps of Engineers, Sacramento. CA.

Figure 1. Decision Procedures for the Collection of Archaeological Artifacts

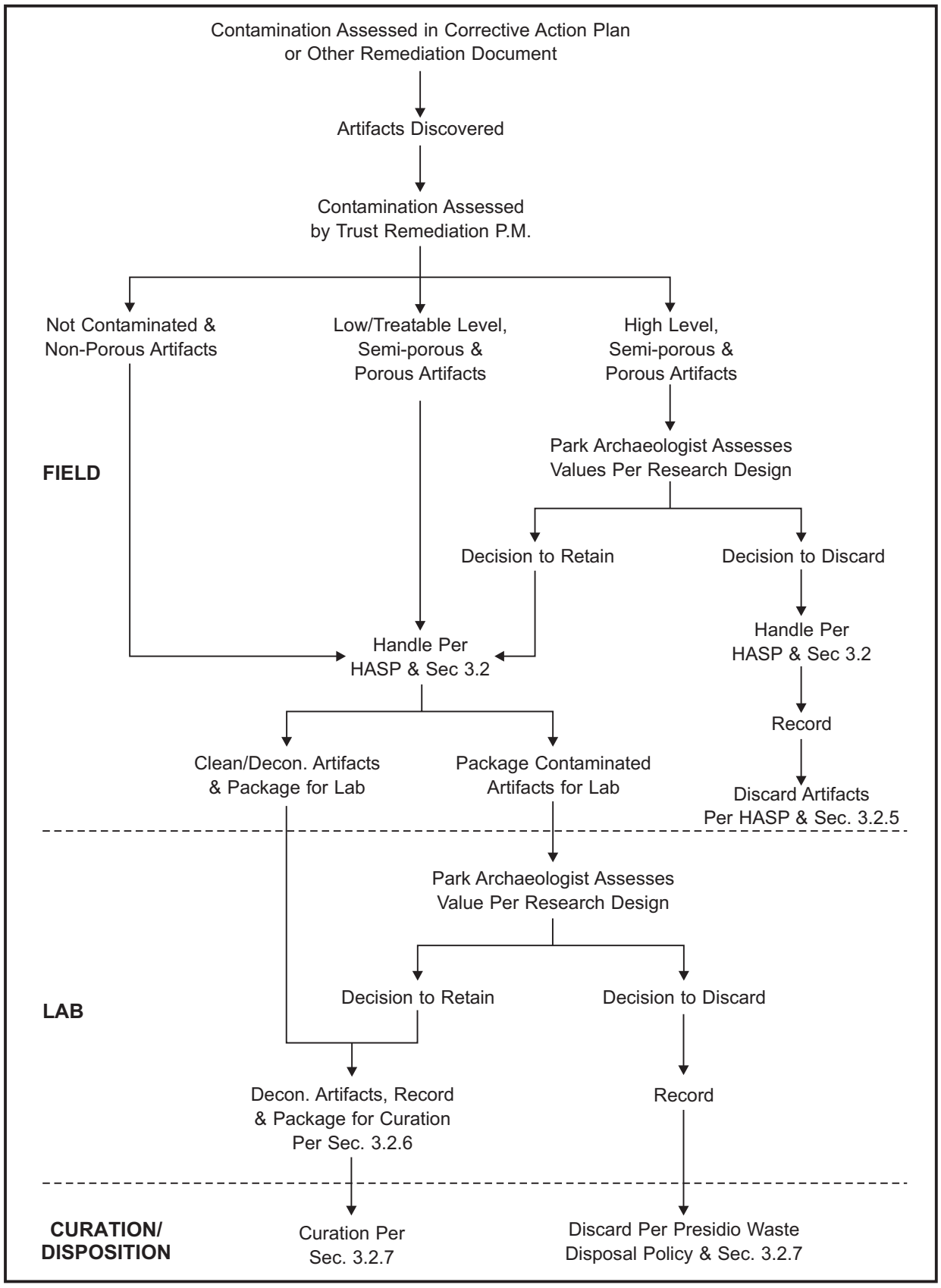


Figure 2. Relative Porosity of Archaeological Remains

	RELATIVE POROSITY		
	Porous	***Semi-porous***	***Non-porous***
ORGANIC REMAINS			
Bone	X		
Leather	X		
Nut/seed	X		
Textile/fabric	X		
Wood/basketry/charcoal	X		
Antler/horn		X	
Ivory		X	
Shell		X	
INORGANIC REMAINS			
Earthenware	X		
Brick (adobe)	X		
Brick (low fired)		X	
Brick (high fired)			X
Ferrous metals			X
Non-ferrous metals			X
Glass			X
Porcelain			X
Stone			X
Stoneware			X

Figure 3. Handling Requirements for Archaeological Material by Work Phase

	Discovery/Field	Processing/Lab	Curation
Porous (e.g., bone[1], fabric)	Handle in accordance with HASP procedures and section 3.2 above; remove excess soil; place in plastic or paper bag or other container to protect structural integrity; if potentially contaminated, label per section 3.2.1 above; transport to lab.	Determine if residual contamination exists; handle in well ventilated environment in accordance with HASP procedures and section 3.2.6 above; rinse with water if not too fragile or clean by hand; standard conservation methods may be applied to non-contaminated materials; dispose of contaminated byproducts appropriately.	Handle cleaned items in accordance with HASP procedures and section 3.2.7 above; most items may be curated in a collection facility that meets the standards at 36CFR79 although some may warrant special conservation and/or storage measures; some items may retain residual contamination that would justify their discard once adequately documented.
Semi-porous (e.g., shell, low-fired brick)	Handle in accordance with HASP procedures and section 3.2 above until cleaned with water, a mild detergent (e.g., Alconox, Simple Green, etc.), and a brush to decontaminate; place in plastic or paper bag; transport to lab.	Determine if residual contamination exists; handle cleaned items in accordance with HASP procedures and section 3.2.6 above; standard conservation methods may be applied to non-contaminated materials.	Handle cleaned items in accordance with HASP procedures and section 3.2.7 above; curate in a collection facility that meets the standards at 36CFR79.
Non-porous (e.g., porcelain, glass, stone, metal)	Handle in accordance with HASP procedures and section 3.2 above until cleaned with water, a mild detergent (e.g., Alconox, Simple Green, etc.), and a brush to decontaminate; place in plastic or paper bag; transport to lab.	Handle cleaned items in accordance with HASP procedures and section 3.2.6 above; standard conservation methods may be applied.	Handle cleaned items in accordance with HASP procedures and section 3.2.7 above; curate in a collection facility that meets the standards at 36CFR79.

[1] The treatment of human remains is described in section 5.4 of ITC's *Archaeological Protocols*. Potentially contaminated human remains should be handled with disposable gloves. Contaminated or not, all human remains must be handled and stored respectfully while they remain under Presidio Trust control.